CIVIL CONFLICT EFFECT ON E-COMMERCE ADOPTION AMONG SMALL AND MEDIUM ENTERPRISES (SMEs) IN KURDISTAN REGION OF IRAQ

ABDULSATAR ABDULJABBAR SULTAN

DOCTOR OF PHILOSOPHY
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By

ABDULSATAR ABDULJABBAR SULTAN

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Nama Pelajar (Name of Student)	:	**Abdulsatar Abduljabbar Sultan**
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Nama Penyelia/Penyelia-penyelia *(Name of Supervisor/Supervisors)*	:	**Dr. Sarina Muhamad Noor** Tandatangan

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ABSTRACT

There are limited studies on E-commerce adoption among Small Medium Enterprises (SMEs) in countries experiencing civil conflicts. Hence, the objectives of this study were to investigate the factors influencing E-commerce adoption and whether civil conflict plays a moderating role in the Kurdistan Region. This study used the Technological, Organizational and Environmental (TOE) Model to develop the research framework. This study was underpinned by the Diffusion of Innovations Theory (DOI) and the Resource Dependence Theory (RDT). Eight variables representing the technology (relative advantage, compatibility, complexity), organizational (organizational readiness, organizational innovativeness, absorptive capacity) and environmental (role of government and relational trust) were tested, and civil conflict was included as a moderator. Data were collected through self-administered questionnaires in 393 SMEs in the Kurdistan Region (Erbil, Sulaimaniyah and Duhok) using the stratified sampling method. However, after data cleaning, only 293 questionnaires were valid for further analysis. The result reveals that six variables (compatibility, complexity, organizational readiness, absorptive capacity and relational trust) have significant relationship with E-commerce adoption. However, organizational innovativeness and the role of government show insignificant relationship with E-commerce adoption. Interestingly, civil conflict moderates the relationship between relational advantage and the role of government in E-commerce adoption. This study contributes to the richness of TOE, DOI and RDT with the inclusion of absorptive capacity, organizational innovativeness and civil conflict to the research framework. Also this study offers valuable insights to managers, and policy- makers who are responsible for assisting SMEs in the new paradigm business operations. The result also contributes to the explanation of E-commerce adoption levels and the government could formulate strategies to encourage SMEs to adopt E-commerce in the civil conflict areas. Conclusions, limitations and suggestions for future studies are also highlighted.

Keywords: E-commerce adoption, Kurdistan, Small Medium Enterprises (SMEs), civil conflict, TOE Model.

ABSTRAK

Sehingga kini, masih kurang kajian yang dijalankan berkaitan dengan penerimagunaan E-dagang dalam kalangan Perusahaan Kecil Sederhana (PKS) di negara-negara yang mengalami konflik awam. Oleh itu, objektif utama kajian ini ialah untuk memeriksa hubungan di antara faktor-faktor yang mempengaruhi penerimagunaan E-dagang dan sama ada konflik awam bertindak sebagai penyederhana di Kurdistan. Kajian ini menggunakan Model Teknologi, Organisasi dan Persekitaran (TOE) untuk membina rangka kajian. Kajian ini juga mengintegrasikan Teori Pembauran Inovasi (DOI) dan Teori Kebergantungan Sumber (RDT). Lapan pemboleh ubah telah dikaji mewakili pemboleh ubah teknologi (kelebihan diperolehi, kesesuaian, kerumitan), organisasi (kesediaan organisasi, inovasi organisasi, kapasiti penyerapan), serta persekitaran (peranan kerajaan dan kepercayaan rasional). Manakala konflik awam telah dipilih sebagai penyederhana. Data telah dikumpul melalui bancian soal selidik kendiri daripada 393 PKS di Kurdistan (Erbil, Sulaimaniyah dan Duhok) dengan menggunakan kaedah pensampelan berstrata. Walau bagaimanapun, selepas penyaringan data, hanya 293 data sahaja yang sah untuk proses analisa lanjutan. Dapatan kajian menunjukkan enam pemboleh ubah mempunyai hubungan yang signifikan (kesesuaian, kerumitan, kesediaan organisasi, kapasiti penyerapan dan kepercayaan rasional) dengan penerimagunaan E-dagang. Walaupun begitu, kelebihan diperolehi, inovasi organisasi dan peranan kerajaan mempamerkan hubungan yang tidak signifikan dengan penerimagunaan E-dagang. Menariknya, konflik awam menyederhana hubungan antara kelebihan diperolehi dan peranan kerajaan dengan penerimagunaan E-dagang. Kajian ini menyumbang kepada penambahbaikan TOE, DOI dan RDT dengan gabungan kapasiti penyerapan, kesediaan organisasi dan konflik sivil ke dalam kerangka kajian. Kajian ini juga memberi gambaran yang lebih jelas kepada pengurus dan penggubal polisi yang bertanggungjawab bagi membantu IKS untuk menggunakan pendekatan baharu dalam menjalankan perniagaan. Dapatan kajian juga turut menyumbang kepada peringkat penerimagunaan E-dagang dan strategi yang boleh diambil oleh kerajaan untuk menggalakkan penerimagunaan E-dagang dalam kalangan PKS di kawasan yang mengalami konflik sivil. Kesimpulan, batasan kajian dan cadangan untuk kajian akan datang juga turut dibincangkan.

Kata kunci: Penerimagunaan E-dagang, Kurdistan, Perusahaan Kecil Sederhana (PKS), konflik awam, model TOE

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LIST OF ABBREVIATIONS

DOI	Diffusion of Innovation
AC	Absorptive Capacity
CC	Civil Conflict
COMT	Compatibility
COMX	Complexity
EC	E-commerce
EDI	Electronic Data Interchange
ESCWA	Economic and Social Commission for Western Asia
ICT	Information Communication Technology
IS	Information System
ITPC	Iraqi Telecommunications and Post Company
MENA	Middle East and North Africa
OI	Organization innovativeness
OR	Organization Readiness
PLS	Partial least square
RA	Relative Advantage
RDT	Resource Dependence Theory
RG	Role of the Government
RT	Relational Trust
SMEs	Small And Medium Enterprises
SPSS	Statistical Package for Social Sciences
TAM	Technology Acceptance Model
TOE	Technological, Organizational, and Environmental framework
TPB	Theory of Planned Behavior
TTF	Technology-Task-Fit
USAID	United States Agency for International Development
UTAUT	Unified Theory of Acceptance and Use of Technology

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CHAPTER ONE
INTRODUCTION

1.1 Background

The relationship between commerce and technology has long been existed. Numerous developments and advances in information and communication technology (ICT) have led to many evolutions in many fields such as global commerce (Choshin & Ghaffari, 2017), which allow electronic transactions that enable many organizations to perform online transactions, sharing information, as well as forming collaboration beyond geographical boundaries using multiple computing platforms (Qammach, 2016; White, Afolayan, & Plant, 2014; Yeh, Lee, & Pai, 2014). These accelerations in ICT have transformed the industry structure and taken the competitiveness to a new level. This transformation created more opportunities, for small and medium enterprises (SMEs) such as an attempt to cost reduction, flexibility increment, error reduction, faster response time and lower cost of labor (White et al., 2014).

Several researchers (Mondragon, Mondragon, & Coronado, 2017; Schlemmer & Webb, 2010) have suggested that SMEs are still lagging in terms of strategy development and implementation. Undoubtedly, SMEs have a well-known reputation as the backbone of the economies and employment growth in developed and developing countries (Oliveira, Alhinho, Rita, & Dhillon, 2017). However, there are claims that SMEs in developing countries do not obtained any benefits from the ICT included E-commerce

(Chee, Suhaimi, & Quan, 2016). Most of these SMEs are still hesitant to embrace and adapt the new technology (Dahnil, Marzuki, Langgat, & Fabeil, 2014). Hence, the SMEs are still finding its position in their strategy development and implementation.

The adoption of E-commerce is not a universal solution to the generation of profit opportunities. From the perspective of managers and owners of SMEs in developing countries, producing high-quality products and traditional exports cannot raise the tendency of firms to adopt E-commerce (Agwu & Murray, 2014; Al-Somali, Roya, & Ben, 2010). Nevertheless, E-commerce is a technology, where if used wisely, can be a part of any industry's competitive strategy that will enable it to gain a competitive advantage over competitors (Agwu & Murray, 2014).

E-commerce offers a quick interaction between the seller and the buyer, and can be achieved using modern technology including a mobile device via internet (Hajli, Sims, & Shanmugam, 2014; Ming-Yen Teoh, Choy Chong, Lin, & Wei Chua, 2013). Indisputably, the use of digital technology with modern information enhances the business operation efficiently and effectively, thus assists in continuing the strategic cooperation and alliances among the SMEs that adopt the technology in their business (Agwu & Murray, 2014; Andal-Ancion, Cartwright, & Yip, 2012; Choshin & Ghaffari, 2017; White et al., 2014).

There are a number of factors that contributed to the development of SMEs in the Middle East and North Africa (MENA). These factors involved corruption, political and economic stability, physical infrastructure, a transparent governance structure, and financial access to assist SMEs. The governments need to recognize these linkages and take initiatives to develop these factors (IFU, 2014). Table 1.1 exhibits the state of these

factors across Middle East and North Africa's countries. For Iraq, the table shows that the country's political stability is fragile, the economic conditions and corruption are is high, the infrastructure and access to finance are low and the regulatory environment is poor.

Table 1. 1
Factors Influencing Development of SMEs in the Middle East and North Africa (MENA)

Countries	Political Stability	Economic Conditions	Corruption	Infrastructure	Regulatory Environment	Access to Finance
Egypt	Fragile	Low	High	Medium	Poor	Low
Saudi Arabia	Stable	Medium	Low	High	Strong	Low
Jordan	Stable	Medium	Low	High	Strong	Medium
Morocco	Semi stable	Medium	Medium	Medium	Strong	High
Tunisia	Semi stable	Medium	Low	High	Strong	Medium
Yemen	Fragile	Low	High	Low	Poor	High
Iraq	Fragile	High	High	Low	Poor	Low

Source: (IFU, 2014).

In Iraq, the economy and financial performance are dominated by the performance of the oil sector which is the major driving force of the economy (IMP, 2013). Over the last three decades, Iraq has suffered from the adverse consequences of three devastating wars which left behind major damages to the economy and country's basic infrastructure especially public facilities. Apart from that, Iraq has also suffered from internal civil conflicts, particularly among Sunni Arabs and Shiite militias on one side and Arabs and Kurds from the other side since 2003, and this has increased the severity of conflict since 2007 until now (HIICR, 2014; Khan, Moon, Swar, Zo, & Rho, 2012; Shaver & Shapiro, 2015). These situation clearly explain why this country suffers low performance of infrastructure and regulatory structure, poor and low access to finance, with the instability of the political situation (ESCWA, 2011).

Evidently, the contrary effects of the conflicts to national economics and societies are well predictable (Robison & Crenshaw, 2010). The development of democracy, and the broad welfare of large numbers are poorly affected by war, terrorism, and warlords. Civil conflict may impacts the growth of technology adoption through its direct negative effect on the economy where the economy was interrupted by destroyed skill, infrastructure and the ability to provide stuffiest capital to the needs. All this has led to Internet Service Provider (ISP) receiving less income for funding related with technology related devices such as computers and other devices either for the SMEs or region levels (Lee, Braynov, & Rao, 2003; Marett, Pearson, Pearson, & Bergiel, 2015; Robison & Crenshaw, 2010).

Besides, civil conflict would also give a direct negative effect on the technology adoption as it destroys transportation and telecommunications infrastructure (Marett et al., 2015; Robison & Crenshaw, 2010). Also, conflict encourages government investigation and withdrawals of freedoms that are related with the telecommunications usage as an effort to reign-in threats by restricting user access on certain Internet sites. In short, withdrawals of civil liberties in the increment of violence have discouraged E-commerce adoption (Khan et al., 2012; Marett et al., 2015; Robison & Crenshaw, 2010)

Hence, it can be concluded that the political environment in Iraq has affected the growth of SMEs in which the statistics of the Iraqi Ministry of Planning (IMP) shows a decreasing number of small enterprise from 47281 in 2011 to 43,669 in 2012 and 27,694 in 2013. Similarly for medium enterprises, the data also shows a decrease in the number of enterprises with a sharp decline from 226 firms in 2013 to 120 firms in the following year. This situation occurs due to security reasons which resulted from civil

conflict and instability of the political situation (IMP, 2013; White, 2012). The details of the information were presented in Table 1.2.

Table 1. 2
The Number of SME in Iraq from 2009 to 2015.

Years	2009	2010	2011	2012	2013	2014	2015
Medium Enterprise	51	56	159	218	266	120	n/a
Small Enterprise	10289	11131	47281	43669	27694	21808	22480

Source: (IMP, 2013, 2015; White, 2012)

Note: Medium Enterprise refers as the number of employees (10-29) employees either small companies which less than 10 people are working.

In 2011, the Ministry of Planning and the Ministry of Industry and Ministry of Trade had conducted a survey of indicators on the use of Information and Communication Technology (ICT) among SMEs in Iraq. Table 1.3 shows the summary of the indicators of the use of ICT and the percentage of using it among the SMEs in Iraq.

Table 1. 3
Indicators for using ICT in SMEs

Types of Information and Communication Technology	Usage %
E-mails	92.20%
Lines of a mobile phones	78.40%
Provide services through its website	62.70%
Use the Internet according to the interaction service with government institutions	55.30%
Desktop computer or laptop	42.50%
Own a Website	38.60%
Use local networks (LAN)	34.30%
Use the Internet in the completion of their work	32%
Use internal communications Network (intranet)	23.10%
Use the online services of customer	22.60%
Lines of Ground phone	22.10%
Use the e-banking service	12.70%
Use closed communications networks (Extranet)	3.70%

Previous researchers have proposed levels of E-commerce adoption according to the their functions available through their website, where different levels of adoption determined by the indicators of the use of ICT activities as presented in the Table 1.3 (Ramayah, Ling, Taghizadeh, & Rahman, 2016; Teo & Pian, 2003). The researcher mapped these definitions with the indicators of ICT reported by Ministry of Planning and the Ministry of Industry and Ministry of Trade. It can be concluded that the definitions stated as Level 0 match with e-mail adoption, Level 1 match with static web, Level 2 match with interactive web presence, Level 3 match with transactive web, and Level 4 match with business transformation. The mapping of these definitions and indicators of ICT presented in the Table 1.4.

Table 1. 4
Mapping E-commerce Adoption Levels and Indicators for using ICT

E-commerce Adoption Level	Description	Indicators for using ICT in SMEs**
Level 0	A firm is in level 0 is one use e-mail as their online communication but does not have a dedicated firm website.	E-mail adoption
Level 1	Level 1 adopters are those who adopt E-commerce with the internet presence. At this level, firms decided to adopt but its implementation is progressive. At this point firms have website with static information without any interactivity to support the website viewers.	Static Web
Level 2	The second level of E-commerce adoption is communication through e-mail, and form entry. Normally the adoption at this level are circled within departments and are not aligned with any business strategy. Firms at this level utilized website to provide website viewers with information such as company information and product information. This strategy assist firms to provide potential customers with essential information related with the firms.	Interactive web presence
Level 3	The third level, online transactions and services, takes into account the integration of business in their daily operations. At this level, the value proposition for using website are for cost reduction in its operation, provide business support, and integration of online processing between customers and suppliers.	Transactive web
Level 4	The fourth level aims to transform the business to the highest level of E-commerce adoption. In this level, most of the business transactions performed over internet and applied real time update to the other integrated applications – i.e. invoices and receipts.	Business transformation

**Ministry of Planning and the Ministry of Industry and Ministry of Trade

Source: Ramayah et al. (2016) and Teo and Pian (2003)

Based on the indicators for using ICT in SMEs and the guidelines proposed by Ramayah et al. (2016) and Teo and Pian (2003), Table 1.5 exhibits the percentage levels of E-commerce adoption in Iraqi SMEs in 2015. This table exhibits that only 10.8% of SMEs does not adopt the E-commerce yet. The majority of the SME in Iraq

is at Level 1 (62.7%) thus indicates that these SMEs have already started with the early stage of E-commerce adoption. Moreover, only 1% of these SMEs reaches level 4, the business transformation level.

Table 1. 5
Levels of E-commerce Adoption in Iraqi SMEs

Levels of E-commerce adoption	**% of usage**
Level 0 – E-mail adoption	10.8%
Level 1 – Static Web	62.7%
Level 2 – Interactive web presence	22.6%
Level 3 – Trans active web	12.8%
Level 4 – Business transformation	1%

Source: Ministry of Planning & Ministry of Industry and Ministry of Trade of Iraq (2015)

1.2 Problem Statement

The usage of internet in commerce area offers considerable opportunities for firms to expand their customer base, enter new product markets, and rationalize their businesses (Agwu & Murray, 2014; Kabanda & Brown, 2017). Currently, studies on E-commerce adoption have been conducted more in developed countries as compared to the developing countries (Ahmad, Abu Bakar, Faziharudean, & Mohamad Zaki, 2014; Chee et al., 2016; Choshin & Ghaffari, 2017). Few of these studies focused on the Middle East countries including Iraq (Al-Somali et al., 2010; Al-Somali, Roya, & Ben, 2015; Al-Taie & Kadry, 2013; Zaied, 2012). The government of Iraq has established a proper infrastructure such as Zain Cash and Chanbar.com which allows online transaction that facilitae E-commerce. However, approximately only 37% of the internet was used for the purpose of developing E-commerce among Iraq SMEs

(Azeez & Al-Khafaji, 2014; IMC, 2016). Thus, this study is conducted as a part of empirical contribution to understand the adoption of E-commerce among SMEs in Iraq.

Previously, oil revenue serves as sources of fund for the country, however the current situation forces to government to introduce Private Sector Development Strategy (PSD) 2014 – 2030 which facilitate the development of SMEs (Prime Minister's Advisory Commision, 2014). This strategy is a good move to facilitate the development of economy of Iraq and reducing the country dependency to the oil revenue. Furthermore, entrepreneurship plays as important role to stabilized the communities, since SMEs have been known as the important factor to support economic growth. Also, entrepreneurial activities including online business is seen as a solution to cater these issues faced by the region (Tasie, 2017).

Furthermore, the literature about the adoption of E-commerce has produced various conflicting results. While researches have consistently demonstrated the importance of technological, organizational, and environmental factors as key determinates of E-commerce adoption, these prior studies had produced inconsistent results on their influence (Almoawi & Mahmood, 2012; Alshamaila, Papagiannidis, & Li, 2013; Chee et al., 2016; Ifinedo, 2011; Jahongir & Shin, 2014; Sila, 2013; Sila & Dobni, 2012; Venkatesh & Bala, 2012). Researchers confirmed that the inconsistency results from adoption research are due to the heterogeneous characteristics of the large number of determinants related to ICT innovation as well as due to the significant interaction among these determinants (Hameed, Counsell, & Swift, 2012; Sila, 2013; Sila & Dobni, 2012). In addition, other scholars suggest that the difference in findings is due to the fact that both side of E-commerce including buyers and suppliers have different

perspectives and motivations (Choshin & Ghaffari, 2017; Hollenstein & Woerter, 2008).

The technological, organizational and environmental (TOE) is one of the most commonly used frameworks to explain technology adoption (Tornatzky & Fleischer, 1990). Based on the past literature reviews, it was found that TOE framework have several restrictions as it is not able to represent an integrated conceptual model or a well-developed theory (Gangwar, Date, & Ramaswamy, 2015). Moreover, Low, Chen, and Wu (2011), also highlighted that the TOE framework has no major variables, and most variables used in the studies are contextual based. Therefore, this study intends to investigate the pertinent variables that are suitable under the context of Iraq.

Technological context variables is one of the elements in the TOE model that represents the variety of technologies available to firms for adoption. Previous scholars have agreed that the adoption of E-commerce has a relationship with relative advantage in order to foster the development of SMEs in developing countries including Arab countries by promoting the utilization of E-commerce practices among SMEs (Alshamaila et al., 2013; Dwivedi, Papazafeiropoulo, & Scupola, 2009; Rahayu & Day, 2015; Ramayah et al., 2016; Sin et al., 2016; Weerakkody, Dwivedi, & Irani, 2009). Hence, it needs to be ascertain in these region on the relative advantage because the technology exposures varies from one country to another. Another variable that was discussed under technology context is compatibility. Past literatures exhibits that compatibility produced inconsistent results in regards with the E-commerce adoption (Ahmad et al., 2014; Kurnia, Karnali, & Rahim, 2015; Oliveira, Thomas, Baptista, & Campos, 2016; Venkatesh & Bala, 2012; Wang, Li, Li, & Zhang, 2016). The different

results reported from different context were related with the variation of the infrastructure related with technologies (Almoawi & Mahmood, 2012; Ifinedo, 2011; Jahongir & Shin, 2014). Similarly with the complexity of technology. The previous study highlighted that this variable is one of the important factors to influence the adoption of technology (Venkatesh & Bala, 2012). However, studies among Canadian and Malaysian SMEs found that they do not recognize complexity as a major factor influencing the adoption of E-commerce (Ahmad et al., 2014; Ifinedo, 2011). This situation is caused by with the variation of education level and culture (McKinnie, 2016). Based on the above discussions, the researcher found that technological context required these variables to be revisited, therefore it must be included in this study.

Another elements in the TOE framework is the organizational context variables. It refers to the characteristics of the firm that influence the adoption of E-commerce technology. Previous scholars found organizational readiness, organizational innovativeness and absorptive capacity as important variables that influence adoption in E-commerce (Chatzoglou & Chatzoudes, 2016; Chee et al., 2016; Choshin & Ghaffari, 2017; Boumediene Ramdani, Chevers, & Williams, 2013; Yu, Dong, Shen, Khalifa, & Hao, 2013). These variables however present conflicting results and some were understudied.

Organizational readiness and organizational innovativeness are key factors in obtaining benefits from E-commerce for SMEs (Hajli et al., 2014; Venkatesh & Bala, 2012). However, the result for organizational readiness is reported as inconsistent between developed countries (Canada, United Kingdom and Greece) and developing countries (Uzbekistan , Indonesia and Iran) because the cost involved related with the

technologies and infrastructures are different between these countries (Awa, Awara, & Lebari, 2015; Chatzoglou & Chatzoudes, 2016; Ghobakhloo, Arias-Aranda, & Benitez-Amado, 2011; Ifinedo, 2011; Rahayu & Day, 2015). The study by Moos, Beimborn, Wagner, and Weitzel (2010) suggested innovation as the most important non-financial goal that contribute as a competitive advantages to many business, hence scholar like Peter Drucker pointed out that marketing with the elements of innovation are main ingredients of entrepreneurial functions (Moos et al., 2010). Also, Keskin (2006) indicates that the majority of empirical studies concerning innovativeness focus on companies in developed countries, while ignoring, to some extent, small firms in developing countries. Consequently, few significant international research activity on innovativeness within the SMEs, has emerged from the extant literature (Lynch, Walsh, & Harrington, 2010). Moreover, McKinnie (2016) has suggested culture is related to innovativeness. Therefore, innovativeness has to be further investigated.

In addition, firms use their ability to learn and adopt the new technology, and use them to leverage advantages better than their competitors (Denan, Ismail, & Ramayah, 2012) which is referred to as absorptive capacity. By looking at the previous studies, the TOE framework has not included absorptive capacity variable as one of the variables under the context of the organization even it is known as important firm characteristics in determining the success of SMEs (Denan et al., 2012; Liao, Fei, & Chen, 2007; Thérin, 2007; Todorova & Durisin, 2007) and can influence firms' flexibility and response to the market change (Denan et al., 2012). Hence, organizational readiness, organizational innovative and absorptive capacity are important variables in the organizational context, which is included to represent organizational factors that influence E-commerce adoption in Iraq.

The final context variables under the TOE framework is the environment. The role of government has presented inconsistent result where it appeared to be significant in developing countries such as Malaysia and Nigeria (Ahmad et al., 2014; Awa, Awara, et al., 2015) but not significant in the developed countries such as Canada and Greece (Chatzoglou & Chatzoudes, 2016; Ifinedo, 2011) because of the different facilities and regulation provided by the government in relation with SMEs. In the context of Iraq, war and civil conflict are the external factors which caused SMEs to suffer from the shortage of resources, that require alliance with external parties and government support to increase their competitive advantages (Biagi & Falk, 2017; Harash, Al-Timimi, & Alsaadi, 2014; Hua, 2016; Kabanda & Brown, 2017).

The globalization of market environment, facilitated by developments in information and communications technology, has led to a shift towards collaboration and partnership for commercial success (Bao, Li, Shen, & Hou, 2016). Moreover, the knowledge-based economy and the information-based organizations further demand a more trust-based approach in order to remain innovative and more competitiveness (Oliveira et al., 2017). Therefore, a relational trust with another parties is seen as important factor to foster the E-commerce activities (Amoako & Matlay, 2015; Oliveira et al., 2017). However, limited studies are known to focus on this variable in the context of E-commerce because most of respondents refuse to participate in the research related with perceived trust in any context setting (Amin et al., 2014; Sohaib & Kang, 2014). Due to the above discussion, the researcher found the need to include the role of government and relational trust as the environmental context variables in this study.

In addition, civil conflict that occurs in Iraq posit a different situation which require further investigation. In prior research, civil conflict has been investigated as a moderator that influence the adoption of electronic services in Afghanistan, but limited support has been reported (Khan et al., 2012). As for that, they suggested future research to explore on the extent civil conflict affects the decision to adopt electronic services (including as E-commerce) in SMEs in countries suffering from civil conflict such as Iraq (Khan et al., 2012; Marett et al., 2015). Moreover, the civil conflict is not well investigated because the difficulty in assessing the place due to security issues (Khan, 2010; Khan et al., 2012; Marett et al., 2015).

Additionallay, civil conflict has been chosen as the moderator to this study because limited studies focused on this variable (Khan, 2010; Khan et al., 2012). The reasons of choosing this variable based on the characteristics outlined by Wu and Zumbo (2008) namely, (1) this variable is a trait, stable characteristic and also the background variable, (2) a third variable that modify the effect, (3) serve as a single role to provide the support between exogeneous and endogenous, (4) uncorrelated with the exogenous variable, and (5) this variable is typically observed and not manipulated. These characteristics are aligned with civil conflict where civil conflict is a trait, stable characteristic and background variable for Iraq since this country faced the situation since 1970 (HIICR, 2015). Clearly, this variable is independent from other exogenous variables. Furthermore, the level of civil conflicts varies from one area to another area in Iraq that indicates that this variable should be observed and not able to be manipulated (HIICR, 2015).

This study is underpinned by two theories namely Diffusion of Innovation (DOI) and Resource Dependency Theory (RDT). Scholars such as Parker and Castleman (2009) agreed that the DOI theory does not provide a lens through which to study these complex social and relational dimensions because the DOI theory focuses on inter-organizational determinants and how the determinants influence firm's decision to adopt the technology (Lee & Cheung, 2004; Lyytinen & Damsgaard, 2001, 2011). DOI does not include the external environment factors to explain the adoption.

In contrary, scholar such as (Kurnia, Karnali, et al., 2015) found that the external environment influencing adoption of E-commerce among SMEs. Therefore, for this study, DOI theory is integrated with RDT to explain the adoption decision based on internal factors (organizational and technological), as well as external factors in the context of Iraq. RDT will help explain how and why firms choose to form collaborations with other organizations to obtain the resources they need (Hessels & Parker, 2013). RDT also will explain the civil conflict factor that moderate the relationship between technologies, organization, and external environment toward E-commerce adoption. Moreover, within the TOE framework and in view of the current study context, the RDT complements the DOI in understanding the underlying mechanism on the influence of other factors within the external environmental context of the focal adopting organization (Kurnia, Karnali, et al., 2015).

Besides, the study also integrates the civil conflict as a moderator between the TOE framework factors to the adoption of E-commerce. The researcher has suggested relative advantage, compatibility and complexity as variables for technological context. The researcher further proposed organizational innovativeness, organizational

readiness, and absorptive capacity as the variables to represent organizational context. Finally, the researcher has recommended the role of government and relational trust as variable for environmental context. The study is perhaps one of the first to use a wide range of variables of the TOE framework and explain these variables through the DOI and RDT theories, as well as integrates the civil conflict as the moderator to investigate E-commerce adoption in Iraq. The results contribute to the empirical studies related to the E-commerce adoption in the context of Middle East particularly in the countries that involved with civil conflict.

1.3 Research Questions and Research Objectives

Based on the above discussions, the research question for this study are as follows: Are there any significant relationships between technological contexts variables, organizational contexts variables, environmental contexts variables and the E-commerce adoption among SMEs in Kurdistan Region of Iraq. Also does civil conflict moderate the relationship between technological contexts variables, organizational contexts variables, environmental contexts variables and the E-commerce adoption among SMEs in Kurdistan Region of Iraq. The specific research questions of this study are as follows:

RQ1: Are there any significant relationships between technology context variables and the E-commerce adoption among SMEs in Kurdistan Region of Iraq?

RQ2: Are there any significant relationships between organizational context variables and the E-commerce adoption among SMEs in Kurdistan Region of Iraq?

RQ3: Are there any significant relationships between environmental context variables and the E-commerce adoption among SMEs in Kurdistan Region of Iraq?

RQ4: Do civil conflict moderate the relationship between technology context variables and the E-commerce adoption among SMEs in Kurdistan Region of Iraq?

RQ5: Do civil conflict moderate the relationship between organizational context variables and the E-commerce adoption among SMEs in Kurdistan Region of Iraq?

RQ6: Do civil conflict moderate the relationship between environmental context variables and the E-commerce adoption among SMEs in Kurdistan Region of Iraq?

Hence, based on the questions, the research objectives are addressed. The general purpose of this study is to investigate the relationships of between the technological contexts variables, organizational contexts variables, environmental contexts variables and the E-commerce adoption among SMEs in Kurdistan Region of Iraq. Also to investigae the moderating effects of civil conflict on the relationship between the technological contexts variables, organizational contexts variables, environmental contexts variables and the E-commerce adoption among SMEs in Kurdistan Region of Iraq. The specific research objectives of this study are as follows:

RO1: To investigae the significant relationships between the technological contexts variables and the E-commerce adoption among SMEs in Kurdistan Region of Iraq.

RO2: To investigae the significant relationships between the organizational contexts variables and the E-commerce adoption among SMEs in Kurdistan Region of Iraq.

RO3: To investigae the significant relationships between the environmental contexts variables and the E-commerce adoption among SMEs in Kurdistan Region of Iraq.

RO4: To examine the moderating effects of civil conflict on the relationship between the technological contexts variables and the E-commerce adoption among SMEs in Kurdistan Region of Iraq.

RO5: To examine the moderating effects of civil conflict on the relationship between the organizational contexts variables and the E-commerce adoption among SMEs in Kurdistan Region of Iraq.

RO6: To examine the moderating effects of civil conflict on the relationship between the environmental contexts variables and the E-commerce adoption among SMEs in Kurdistan Region of Iraq.

1.4 Scope of the Study

This study utilized all listed SMEs in Central Statistical Center directory, under Ministry of Planning in Iraqi Kurdistan (Erbil province, Sulaimaniya province and Duhok province) as a research population (IMP, 2013). Kurdistan is one of the regions in Iraq and shows an impressive development prior to 2014. However, this region started to face problem with the economy with the outbreak of the Syrian civil war, which began in 2011, and the revolution of the ISIS (Islamic State in Iraq and Syria) group, by June 2014. This situation worsen when the Iraqi Federal Government in

Baghdad suspended the fund transfer from the federal budget oil price due to the reduction of oil price up to 65% and the public expenses were increased tremendously (Middle East Research Institute, 2016). Moreover, the Kurdistan economic also badly affected by the internal conflict in Iraq, which raised insecurity and humanitarian issues related with the displacement thousands of families that flees from their area, thus decreased investor confidence to invest in this region (Middle East Research Institute, 2016). These problems lead to the increased of unemployment rate to a critical point from 7% to 16% in 2014 (Middle East Research Institute, 2016).

There are two reasons behind the selection of Iraqi SMEs listed in the Central Statistical Center directory. Firstly, the small and medium enterprises in these areas (the Kurdish region) offer the most productive projects throughout Iraq in addition to the support from the local governments in these areas for the application of new technology (Roipmac, 2013; USAID, 2014; White, 2012). Iraq's Central Statistical Organization of the Ministry of Planning has classified SMEs on the basis of the number of employees; the medium-sized firms are companies in which employs 10-29 employees while the small companies consists of less than 10 people working (IMP, 2013). Secondly, these provinces have suffered from civil conflicts since 1970 but they experienced different level of conflict ranges from non-violent, violent crisis, limited war and war (HIICR, 2015).

1.5 Significance of the Study

The result of this study contributes to several theoretical contributions namely (1) the integration of DOI and RDT, (2) the inclusion of absorptive capacity in the research framework and (3) the use of civil conflict as moderator.

This study contribute to the development the research framework based on TOE framework and underpinned by DOI and RDT. In TOE framework, Tornatzky and Fleischer (1990) identified and classified the factors that influenced technological adoption into three contexts: the technological, the organizational, and the environmental context. Scholars such as Parker and Castleman (2009) agreed that the DOI theory does not provide a lens through which to study these complex social and relational dimensions because the DOI theory focuses on inter-organizational determinants and how the determinants influence firm's decision to adopt the technology (Lee & Cheung, 2004; Lyytinen & Damsgaard, 2001, 2011). DOI does not include the external environment factors to explain the adoption. Thus, RDT helps to explain these factors

As Kurnia, Karnali, et al., (2015) found that the external environment influencing adoption of E-commerce among SMEs. DOI theory is integrated with RDT to explain how and why firms choose to form collaborations with other organizations to obtain the resources they need (Hessels & Parker, 2013).

Most studies on absorptive capacity focus on very large organizations with sophisticated structures and a strong R&D orientation. Very few studies address the theory of absorptive capacity in the context of small and medium size organizations.

Absorptive capacity generally facilitates the adoption of innovation. Also SMEs with a well-developed absorptive capacity can additionally use it as an instrument to improve the effectiveness of strategic alliances, and thus enhance firm performance (Flatten et al., 2011). Therefore, absorptive capacity is included in the research framework.

Moreover, there are limited studies of SMEs that includes civil conflict in their research framework. Civil conflict as moderator at organization level in this study offers a better understanding on how civil conflict modify the relationship between the studied variables (relative advantage and role of government) and the adoption E-commerce among similar unit of analysis and research context.

1.6 Definition of Terms

This section discussed about the definition of terms used for this study.

1.5.1. E-commerce Adoption:

The use of Internet and other electronic devices to sharing business information and transactions, maintaining the relationships with the business partners, and stakeholders (Al-Bakri & Katsioloudes, 2015; Mirchandani & Motwani, 2001).

1.5.2. Technological Context

The technological context relates to both internal and external technologies available to an organization. Its main focus is on how the existing technologies within the

organization as well as the available innovations external to the firm influences the innovation adoption process (Hameed & Arachchilage, 2017).

1.5.3. Relative Advantage

Relative advantage: the degree to which an innovation is perceived as being better than idea it supersedes (Hameed & Counsell, 2014).

1.5.4. Compatibility

Compatibility refers to how well E-commerce fits with the current business processes as well as the suppliers and customers (Ahmad, Abu Bakar, Faziharudean, & Mohamad Zaki, 2014).

1.5.5. Complexity

Complexity is defined as the degree to which a firm perceives the adoption of E-commerce would be complicated (Ahmad et al., 2014).

1.5.6. Organizational Context

The organizational context refers to the organizational readiness and the amount of slack resources available internally (LI , Zhao, & Yu, 2015) that would affect the adoption of E-commerce.

1.5.7. Organizational readiness

Organizational readiness measures a firm has sufficient ICT sophistication and the financial resources in the adopting organization (Ramdani, Chevers, & Williams, 2013).

1.5.8. Organizational Innovativeness

The organizational innovativeness is the willingness of the organization to encourage and support the innovation among the employees by providing the development of new knowledge and insights (Hussein, Omar, Noordin, & Ishak, 2016).

1.5.9. Absorptive Capacity

Firms' capability to exploit new, valuable external knowledge and predict the nature of technological advances (Cohen & Levinthal, 1990).

1.5.10. Environmental context

Environmental context refers to the external environment where the organization operates. The environmental factors can be either the constraints or the enablers for innovation adoption (Hsu, Ray, & Li-Hsieh, 2014)

1.5.11. Role of Government

Refers to the assistance provided by the authority to encourage the spread of Information System innovations in businesses (Ifinedo, 2011).

1.5.12. Relational Trust

Relational trust represent environmental factor that captures the stability of its relationship with trading partners who become their critical resources in the external environment (Chwelos, Benbasat, & Dexter, 2001).

1.5.13. Civil Conflict

Civil conflicts are defined as clashes of interests and expressed struggles for political dominance among groups that have mismatched goals and interests (Heidelberg Institute for International Conflict Research 2008).

1.7 Organization of the Report

This chapter outlines various important contents that are relevant to this research study. The specific contents are: background of the research study, problem statement, research objectives, research questions, scope of the study, and significance of the research.

The second chapter will discuss the ICT development in Iraq, relevant literature in the domain of E-commerce adoption, determinants of E-commerce in previous research and the underlying theories diffusion of innovation, Resource Dependence Theory, and TOE model. The relevant contents of this chapter include underpinning theories, technological, organizational and environmental contexts, as well as civil conflict.

The third chapter develops workable research framework that dealt the research hypotheses, explains the research design, and demonstrates the data collection, describe the descriptive statics regarding research variable and respective respondent, and finally justifies the data analysis strategy. Chapter four elaborates further on application of PLS-SEM in order to achieve the proposed research objectives and to test the proposed framework. Finally, chapter five provides an in-depth discussion of the research findings, highlights the theoretical and practical implications of the study, specifies research limitations, and outlines future research directions that could extend the present study.

CHAPTER TWO
LITERATURE REVIEW

2.1. Overview of the Chapter

This chapter provides the review of past literatures which covers (1) the concept of E-commerce, (2) overview of ICT development in Iraq, (3) the importance of E-commerce adoption in Iraq, (4) overview of previous literature related to technology adoption, (5) overview of factors affecting technology adoption, (6) four perspectives of E-commerce, and (7) the underpinning theories, and (8) factors affecting E-commerce adoption.

2.2. Electronic Commerce

This section includes several subheadings namely, definition of E-commerce, types of E-commerce, and the potentials and impacts of E-commerce, where all concepts surrounding it must first be clarified. This clarification is necessary because most of these terms are overlapping and at times used interchangeably in the literature.

2.2.1. Definition of E-commerce

The application of ICT enabled firms to use faster and economical methods to provide diverse products and services, satisfy customer requirements, and increase firm value. In order to face the changes of complex, and competitive environment, enterprises must integrate ICT and firm strategies to create competitive advantages. Hence, if firms decide to adopt an innovation of technologies in their operations, they must ensure that

the strategies they establish can be implemented effectively. However, scholar found that E-commerce is one of a key factors for combining a possessing information technology capabilities with competitive strength, thus giving more advantages to the adopters (White et al., 2014; Yeh et al., 2014).

In general, the concepts of E-commerce are the basic and comprehensive concepts which are used to describe any transactions made using internet via communication devices such as notebooks and smartphones. E-commerce is the process of selling, buying, as well as exchanging services, products, and information through web based technology including internet (Turban & King, 2011). This definition focuses more on activities that enable firm to interact with their environment. These activities include both inbound logistics and outbound logistics activities such as buying and selling activities. Other scholars stressed that E-commerce is not only limited to the purchasing and selling activities but also includes all activities that support the trading process (Quaddus & Achjari, 2005).

According Choshin and Ghaffari (2017) E-commerce is regarded as an appropriate strategy for marketing, selling and integrating online services which can play a significant role in identifying, obtaining and maintaining customers. Ecommerce optimizes and enhances the relationship and communications between the organization, producers, distributors and customers.

E-commerce Adoption refers to the different levels of E-commerce adoption, which resembles five categories of adopters (Ramayah et al., 2016; Teo & Pian, 2003). These levels are:

(Level 0 e-mail adoption): A firm is in level 0 is one use e-mail as their online communication but does not have a dedicated firm website.

(Level 1 Static Web): Level 1 adopters are those who adopt E-commerce with the internet presence. At this level, firms decided to adopt but its implementation is progressive. At this point firms have website with static information without any interactivity to support the website viewers.

(Level 2 – Interactive web presence): The second level of E-commerce adoption is communication through e-mail, and form entry. Normally the adoption at this level are circled within departments and are not aligned with any business strategy. Firms at this level utilized website to provide website viewers with information such as company information and product information. This strategy assist firms to provide potential customers with essential information related with the firms.

(Level 3 – Transactive web): The third level, online transactions and services, takes into account the integration of business in their daily operations. At this level, the value proposition for using website are for cost reduction in its operation, provide business support, and integration of online processing between customers and suppliers.

(Level 4 – business transformation): The fourth level aims to transform the business to the highest level of E-commerce adoption. In this level, most of the business transactions performed over internet and applied real time update to the other integrated applications – i.e. invoices and receipts (Al-Bakri & Katsioloudes, 2015; Mirchandani & Motwani, 2001).

2.2.2. Potentials and Impacts of E-commerce

The emergence of E-commerce offers opportunities for firms to penetrate new markets, diversify their offering, and explore new niche markets. Reports indicates that there is a growth in the internet adoption among the SMEs in the developed countries such as the European countries or United States, and other emerging markets such as China. This shows that the SMEs also focuses on the adoption of E-commerce, similarly with the larger firms (Agwu & Murray, 2014).

A large number of studies have been undertaken to determine the benefits achieved from using E-commerce, and examine the firm performance after adopting a variety of IT applications such as E-commerce (Ahmad et al., 2014; Suleiman, 2015; Wiengarten, Humphreys, McKittrick, & Fynes, 2013; Yao & Zhu, 2012). One of the major benefits is related with cost , where the main sources of cost are the coordination cost, information and search costs, governance cost, and asset specificity cost (White et al., 2014). Hence, with the assistance of E-commerce to perform organizational transactions, it could reduce these costs and lead to a better firms' performance (Araste et al., 2013; Awiagah et al., 2015; Fawzy & Abdel Salam, 2015). Moreover, benefits such as faster decision-making, reduced marketing time, increased efficiency and productivity, better control, and reduced bureaucratic systems have been recorded (Rawashdeh et al., 2015; Scupola, 2009; Suleiman, 2015).

Even though Chee et al. (2016) found that E-commerce plays important roles in developed countries and developing countries. However, there are some findings that claimed that the SMEs in developing countries failed to obtained benefits from the

adoption of E-commerce due to unable to leverage the knowledge of business in the new environment (Chee et al., 2016).

2.3. Overview of ICT Development in Iraq

The online trading has started to influence the global economic growth; however, there are still not enough studies focusing on the importance of E-commerce among customers in various developing countries including the Arab world (Kadhim & Al-Taie, 2013). Few of these studies focused on Middle East countries including Iraq (Al-Somali et al., 2010; Al-Somali et al., 2015).

Iraq land is reported as one of the hosts of the oldest civilizations in the world. It consists of varieties of cultural lineage and racial groups; including Arabs, Kurds, Assyrian, Turkmen, and many other minorities. Until now, Iraq is facing some security issues and political instability in the country that give a direct impact to the development of the country. However, the country is enjoying a tremendous progress in the area of Information Technology and Communication (ICT) (NICI, 2014; Roipmac, 2013).

Iraq started a better optimal usage of the internet in late 2002, with a very good effort invested in re-building and developing the network infrastructure (ESCWA, 2011), but the ravaging and devastating effects of conflicts, violence, sectarian crisis, and accidents posed a barrier to the development and also prohibited the Iraqis from enjoying everyday life safety. Khan et al. (2012) asserted that Iraq suffered from high levels of violence and corruption. It is observed that Iraq has succeeded in developing

their information communication technology an averagely standard infrastructure, strategies, and connectivity.

ICT is known as the key enabler of economic growth, innovation, and competitiveness in various sectors. These sectors have opportunities to leverage the development of ICT in order to craft their competitive advantages (Yeh et al., 2014). For example, the finance and the trade sectors enable the inter-organization transfer of funds and electronic transactions; thus, it fosters the buying and selling activities, such as E-commerce (ESCWA, 2011).

There are many public as well as private organizations that are related to the development of ICT in Iraq. Among them are two main organizations that govern the investment and the development of ICT, namely the Ministry of Communication and the Iraqi Communication and Media Commission. The Ministry of Communication is a public organization under the Iraqi government. Recently, the Ministry of Communications has announced a completion of various strategic ICT projects, including installation of ICT infrastructure (fiber optic networks and wireless communication services). More investments are targeted to improve ICT infrastructure in order to support various types of electronic applications. As for that, a strategic move has been formulated to support a five year strategy for the advancement of the ICT sector which has been deliberated in the collaboration with the Economic and Social Commission for Western Asia (ESCWA) (ESCWA, 2011). On the other hand, the Iraqi Communications and Media Commission is an independent body that was established to promote investment in ICT for the country. The main activity of the Commission is to govern a work standard related to ICT for Iraq.

Other than the above organizations, an alliance such as the Iraq Information and Communications Technology (ICT), Alliance or Iraq ICT Alliance together with the United States Agency for International Development (USAID) have formed a public-private sector partnership that focuses on fostering ICT development in Iraq. Among the focus areas of Iraq ICT are to develop the ICT infrastructure for education and promote the use of ICT to increase productivity. The Iraq ICT Alliance consists of multinational information technology (IT) vendor, IT service providers, local companies, and donor organizations (UNIDO, 2015).

In 2012, Iraq had allocated USD500 million on upgrading outdated and damaged infrastructure after decades of war. The government projected an increase of 25% of the penetration of fixed line phone and internet within five years from 2010 to 2015. The government under the Ministry of Communication also aimed to complete a data highway in order to allow connection between Iraq to other countries through fiber connection (ITU, 2012a). As such, through partnership between Reliance Global.com and the Iraqi Telecommunications and Post Company (ITPC) a connection is provided from Iraq to countries in the other continents (Middle East, Asia, Europe and North America) via a landing station. This landing station is integrated into the firm's network, thus improves the quality and increases the reliability of the connectivity (ITU, 2012b).

The investigation of the use of ICT in Iraq has produced some interesting results. As presented in Table 2.1, the percentage of internet use for business purpose is minimal among micro-enterprises. However, the use of internet increases with firm size, where

approximately 10% among small enterprises, and 26% of medium-sized enterprises utilized this technology(White, 2012).

Table 2. 1
Use Internet and Mobile Phone for Business Purposes

	Micro	Small	Medium	Total	%
The Use of Internet for Business					
Use Internet	112	59	9	180	4.5
Do Not	3293	501	26	3820	95.5
Yes %	0.03	10.5	25.7	4.5	-
The Use of Mobile Phone for Business					
Use Mobile	2346	485	32	2863	71.6
Do Not	1059	75	3	1137	28.4
Yes %	68.9	86.6	91.4	71.6	-

Source: White (2012).

Despite the fact that the use of internet in Iraq is encouraging, the internet has not been used for the purpose of developing E-commerce in Iraq (Azeez & Al-Khafaji, 2014). Table 2.2 presents the internet usage in Iraq.

Table 2. 2
Internet Users in Iraq

Year	Total Population	Internet Users	Penetration (% of Pop)
2016	37,547,686	4,892,463	13 %
2015	36,423,395	4,552,924	12.5 %
2014	35,273,293	3,985,882	11.3 %
2013	34,107,366	3,137,878	9.2 %
2012	32,957,622	2,339,991	7.1 %

Continue

Table 2. 2 (Continued)
Internet Users in Iraq

Year	Total Population	Internet Users	Penetration (% of Pop)
2011	31,867,758	1,593,388	5 %
2010	30,868,156	771,704	2.5 %
2009	29,970,634	317,689	1.1 %
2008	29,163,327	291,633	1 %
2007	28,423,538	264,339	0.9 %
2006	27,716,983	263,961	1 %
2005	27,017,712	243,159	0.9 %
2004	26,320,530	236,885	0.9 %
2003	25,630,426	153,783	0.6 %
2002	24,943,793	124,719	0.5 %
2001	24,258,794	24,259	0.1 %
2000	23,574,751	11,787	0.1 %

Source: (IMC, 2016)

The growth of Internet usage in all Arab countries attract more Iraqis to the use of E-commerce, which in turn would positively influence the economic prosperity and increase the value of E-commerce in Iraq (Al-Somali et al., 2010). In addition, the structure of the new Internet by reducing the price of Internet use causes the growth of its usage among younger generations, where they can deal with modern technology faster than expected (Hashim, 2015). In the same context, an extensive survey and study conducted by the Iraq Ministry of Communications for Internet users in Iraq (2016) investigated the widespread use of E-commerce and found that users of E-commerce in Iraq were totaled more than 4,892,463 million, or 13 percent of the population with a value of $3.28 billion (IMC, 2016). The study showed a steady growth. The use of internet in Iraq is approximately 37%, of the population of SMEs but, the internet has not been used for the purpose of developing E-commerce in Iraq (Azeez & Al-Khafaji, 2014).

2.4. The Importance of E-commerce in Iraq

In Iraq, many applications that are related to information technology (IT) have been enumerated. E-business, E-education, and E-employment, and E-health application in Iraq is said to be still at the planning stage. In light of this, the Ministry of Health and Human's Organizations is working together to come up with a strategic plan to improve the situation (ESCWA, 2013).

Applications in E-commerce are still not widely acceptable in Iraq. In 2003, Iraq invited foreign banks to invest in the country, as the first case in the region, these banks called for a partnership with the local banks to start e-banking applications (ESCWA, 2007). E-commerce and e-payment were not acceptable among Iraqi society. As for that, the Ministry of Higher Education and the Ministry of Science and Technology had promoted these concepts in national seminars and some projects to university students at the post graduate level. These efforts promoted interest among publics (at this time is still limited to students, teachers, and researchers) in activities related with E-commerce and e-payment. These concepts were further flourished by the amended trade law, No. 78 for year 2004, which leads several markets to offer services like delivering foreign goods bought over the internet to their doorsteps (ESCWA, 2013).

The present state of the ICT infrastructure in Iraq, require further development of the country's information communication technology (ESCWA, 2013). However, the current project that is of utmost interest to the United Nations in Iraq is the use of electronic system for procurement; this project is expected to be supported by foreign countries, and would eventually help in the rebuilding of Iraq (ESCWA, 2007). Historically, one of the significant projects classified under the E-business category in

Iraq is better known as "Tejari Iraq", which improve relationships within different agencies. This project costs billions of dollars obviously or covertly spent for the needed distribution to airports, hospitals, telecommunications, schools and gas producing companies (ESCWA, 2011).

2.5. E-commerce Adoption in Iraq

Numerous SMEs in Iraq strive to leverage the advantages of adopting the technology related with the Internet including E-commerce. Moreover, E-commerce transactions are flexible be adopted by different SMEs in order to support their business transaction depending on the level of adoption. Hence, the level of E-commerce adoption among SMEs, are varies of online business transactions that are used to support the operations to customers, business partners and employees.

This study focuses on five level of the adoption of E-commerce in order to explain the situation of adopters among SMEs. Furthermore, reviews of technology adoption highlighted that E-commerce adoption has been operationalized as the state of online business transactions are leveraged by firms to support various operations in the supply chain. E-commerce adoption therefore was operationalized by asking respondents to identify the level of business transaction conducted online in order to identify the level of adoption of E-commerce in these firms. Five level of E-commerce adoption were identified namely, level 1 (e-mail adoption), level 2 (static web), level 3 (interactive web presence), level 4 (transactive web), and level 5 (business transformation).

These levels explain the evaluation, engagement and state of E-commerce adoption to support the daily operations. These E-commerce adoption is align with Rogers (1995) description of the innovation process, that focus on gaining knowledge at the beginning of the innovation process and complete with the adoption decision made by the decision makers. Furthermore, these levels also align with the web technology framework proposed in the past literatures (Ramayah et al., 2016).

Furthermore, past scholars like Molla & Licker (2005a, 2005b) claimed that the E-commerce process starts with the interactive stage of adoption in this technology, and those who are not reach this stage is considered as non-adopters. Moreover, this research suggest that firms can start to engage with E-commerce activities by adding communication with their business partners and customers over the Internet, such as through e-mail, social networks site and online communication media. Table 2.3 provides a summary of past literatures related with the internet technology adoption levels.

Table 2. 3
Summary of the Adoption of Internet Technologies

Authors	Dependent Variable	Adoption level
(Zhu et al., 2006)	E-business Adoption	1. Initiation 2. Adoption 3. Routinization
(Lin & Lee, 2005)	E-business Adoption	1. Beginning 2. Proliferation 3. Interacting 4. Business integration 5. Business transformation
(Molla & Licker, 2005a, 2005b)	E-commerce Adoption	1. Initial adoption 2. Institutionalization
(Teo & Pian, 2003)	Internet adoption	1. Email adoption 2. Web presence 3. Prospecting 4. Business integration 5. Business transformation
(Ramayah et al., 2016)	Web adoption	1. Email adoption 2. Web presence 3. Prospecting 4. Business integration 5. Business transformation

2.6. Selection of Variables Related with E-commerce Adoption

E-commerce adoption is one of the categories in the technology adoption. Hence, prior to investigation related to the E-commerce adoption, the factors related with the technology adoption were examined. Table 2.4 presents 27 past studies related with technology adoption, variables used and studied organization as the unit of analysis among the SMEs.

Table 2. 4
Some Selected Studies Focusing on SMEs

Source	Respondent	Method	Type of Adoption	Adoption Factors
(Choshin & Ghaffari, 2017)	Organization	Survey	E-commerce Adoption	- Customer Satisfaction - Costs - Infrastructure - Individual's' Awareness and Knowledge
(Goswami & Dutta, 2017)	Organization	Survey	Behavioral Intention to Adopt E-commerce	- Performance Expectancy - Effort Expectancy - Social Influence - Facilitating Conditions
(Chatzoglou & Chatzoudes, 2016)	Organization	Mix method	Electronic Business Adoption	- Information Technology Infrastructure - Skills of Internet - Size of Firm - Scope of Firm - Knowledge Of CEO'S - Cost of Adoption - Willingness and Capabilities of Supply Chain Partners - Pressure of Competitive - **Support of Government** - Readiness of Consumer
(Sin et al., 2016)	Organization	Survey	E-commerce Adoption	- **Relative of Advantage** - Pressure of Competitive
(Wang et al., 2016)	Organization	Survey	Mobile Adoption	- **Relative of Advantage** - **Compatibility** - **Complexity** - Size of Firm - Competence of Technology - Top Managcment Support - Critical Mass - Pressure of Competitive - Intensity of Information

Continue

Table 2. 4 (Continued)
Some Selected Studies Focusing on SMEs

Source	Respondent	Method	Type of Adoption	Adoption Factors
(Chee et al., 2016)	Organization	Survey	E-commerce Adoption	- Pressure of Competitor - **Support of Government** - Top Management - **Readiness of Organization** - Barriers - **Benefits**
(Awiagah et al., 2015)	Organization	Survey	E-commerce Adoption	- **Relative Advantage** - Credibility - Self-Efficacy of CEO - Support of Management - **Support of Government** - Conditions of Enabling - Pressure of Mimetic
(Abualrob & Kang, 2015)	Organization	online survey	E-commerce Adoption	- Instability of Government - Restriction of Occupation - Obstacles of Logistics - Uncertainty - **Complexity** - Risk - Behavioral Control
(Kurnia, Choudrie, et al., 2015)	Organization	Survey	E-commerce Adoption	- **Benefits** - Organization Resources and Governance - Industry Structure and Standards - Services of Supporting - Pressure of Environmental
(Rahayu & Day, 2015)	Organization	Survey	E-commerce Adoption	- **Benefits** - **Compatibility** - Cost Negatively - **Readiness of Technology** - Size of Firm - Pressure of Customers/Suppliers - External Support

Continue

Table 2. 4 (Continued)
Some Selected Studies Focusing on SMEs

Source	Respondent	Method	Type of Adoption	Adoption Factors
(Awa, Awara, et al., 2015)	Organization	Survey	E-commerce Adoption	- ICT Experts Conglomeration - Non-Transparency In Government Support Programs - Weak of Finance - Size of Firm - Inadequacy of Infrastructure - Lack of Openness and Business Integration
(Ahmad et al., 2014)	Organization	Online Survey	E-commerce Adoption	- **Relative Advantage** - **Compatibility** - **Complexity** - Knowledge of E-commerce - Management Attitude Toward E-commerce - External Change Agents - Pressures of Trading Partners - Pressures of Competitors
(Hajli et al., 2014)	Organization	Survey	E-commerce Adoption	- **Readiness of Organizational** - Awareness
(Jahongir & Shin, 2014)	Organization	Survey	E-commerce Adoption	- Advantage - Usefulness - **Compatibility** - Top Managers Support - **Readiness of Organizational** - Human Resources - Pressure of Competitive - **Support of Government** - Social and Culture

Continue

Table 2. 4 (Continued)
Some Selected Studies Focusing on SMEs

Source	Respondent	Method	Type of Adoption	Adoption Factors
(Saedi & Iahad, 2013)	Organization	Interview	Adoption of Cloud Computing	- Cost Savings - **Relative Advantages** - **Compatibility** - Accessibility - Lack of Data Security - Lack of Data Privacy - Size of Information Technology Resources - SMEs Size - Service Level Agreement - Competencies - **Supports of Government** - Pressures of Competitor - Family & Friends Members Advises - Information Technology Specialist and Consultants Advises - Advises of Business Network
(Boumediene Ramdani et al., 2013)	Organization	Direct interviews	Enterprise Applications adoption	- **Relative Advantage** - **Compatibility** - **Complexity** - Trialability - Observability - **Readiness of Organizational** - Experience of ICT - Size - Scope of Market - Pressure of Competitive - Support of External ICT

Continue

Table 2. 4 (Continued)
Some Selected Studies Focusing on SMEs

Source	Respondent	Method	Type of Adoption	Adoption Factors
(Alshamaila et al., 2013)	Organization	Interviews	Adoption of Cloud computing	- **Relative Advantage** - Uncertainty - **Compatibility** - **Complexity** - Trialability - Size - Top Management Support - Innovativeness - Prior IT Experience - Competitive Pressure - Industry - Scope of Market - Supplier Efforts and External Computing Support
(Almoawi & Mahmood, 2012)	Organization	Survey	E-commerce Adoption	- Size of Firm - Attitude of Owner's - Innovativeness of Owner's - Knowledge Owner's - **Relative Advantage** - **Compatibility** - **Complexity** - Intensity of Information - Intensity of Competition
(Ruivo, Oliveira, & Neto, 2012)	Organization	Survey	Enterprise Recourse Planning	- **Compatibility** - **Complexity** - Efficiency - Best Practice - Training - Pressure of Competitive

Continue

Table 2. 4 (Continued)
Some Selected Studies Focusing on SMEs

Source	Respondent	Method	Type of Adoption	Adoption Factors
(Sila & Dobni, 2012)	Organization	online survey	E-commerce Adoption	- Cost - **Complexity** - Network Reliability - Data Security - Scalability - Top Management Support - **Trust** - Pressure of Trading Partners - Pressure of Competitors - Dynamism of Environmental - Complexity of Environmental - Hostility of Environmental
(Zaied, 2012)	Organization	Survey	E-commerce Adoption	- Social And Culture - Technical - Economical - Political - Organizational - Legal And Regulatory
(Ghobakhloo et al., 2011)	Organization	Survey	E-commerce Adoption	- **Relative Advantage** - **Compatibility** - Cost - Information Intensity - Knowledge Of CEO S' - Innovativeness of COE's - Size of Business - Competition - Pressure of Buyer/Supplier - Support of Technology Vendors

Continue

Table 2. 4 (Continued)
Some Selected Studies Focusing on SMEs

Source	Respondent	Method	Type of Adoption	Adoption Factors
(Ifinedo, 2011)	Organization	Survey	E-Business Technologies Adoption	- **Relative Advantage** - **Compatibility** - **Complexity** - Management Support - **Readiness of Organizational** - Pressure of Competition's - Pressure of Customer's - Pressure of Partner's - **Support of Government** - Firm Size: Revenue - Firm Size: Workforce - Sector of Industry - Age of Firm
(Shah Alam, Ali, & Mohd. Jani, 2011)	Organization	Survey	E-commerce Adoption	- **Relative Advantage** - **Compatibility** - Ease of Use - **Readiness of Organizational** - Security - Cost - Characteristics of Managers
(Lip-Sam & Hock-Eam, 2011)	Organization	Survey questionnaires	E-commerce Adoption	- Internet Service Quality - Cost of IT - Security of IT - **Readiness of Organizational** - Strategy of IT - External Pressure - External Support

Continue

Table 2. 4 (Continued)
Some Selected Studies Focusing on SMEs

Source	Respondent	Method	Type of Adoption	Adoption Factors
(Scupola, 2009)	Organization	Survey questionnaires	E-commerce Adoption	- **Relative Advantage of E-commerce** - Barriers and Benefits - Related Technologies of E-commerce - Role of The Government - Technology Support Infrastructure - Characteristics of CEOs and Top Management Support - Attitude of Employees IS Knowledge - Resource Constants
(Sarkar, 2009)	Organization	Qualitative study: Case Study	E-commerce Adoption	- User Involvement - Customer Interaction - Top Management Support - CEO's Knowledge - Technical Compatibility - IS Expertise - IS Security - Cost Benefit - **Perceived Advantage**

Refer to the past reviews from Table 2.4, this study tested the technological variables (relative advantage, compatibility, complexity), organizational variables (organizational readiness, organizational innovativeness, absorptive capacity), environmental variables (role of government and relational trust) and civil conflict in one research setting. For technological variable, only six studies tested relative advantage, compatibility and complexity in one studies (Wang et al., 2016; Ahmad et al., 2014; Boumediene Ramdani et al., 2013; Alshamaila et al., 2013; Almoawi &

Mahmood, 2012; Ifinedo, 2011). Other studies tested any one of technological variable or a combination of other two in their studies.

Even though there are many variables affect e-commerce adoption, only 8 variables are relevant to the situation in Iraq. For example, previous studies (Ahmad et al., 2014; Almoawi & Mahmood, 2012; Saedi & Iahad, 2013) have investigated managerial knowledge and firm size. However, in Iraq the firm size is defined as very small which affect the level of management. Hence, it is not suitable to include in this study.

Moreover, based on the personal communication with the Head of Board Industrial Zone, '... the government spent hundreds of millions dollars in infrastructure but the government does not get an expected result, (personal communication, 9th February 2017). From the interview the researcher found that it is very important for a study to be conducted that related with the technology available in the country such as relative advantage, complexity and compatibility. Physical infrastructure is always a challenge in a conflict zone area (Lemmon, 2012). However, every successful entrepreneurs must always think ahead in creating the competitive advantage in order to sustain their business (Alexander, 2012). Therefore E-commerce as seen as the way to gain the business advantage in Iraq. Moreover, the entrepreneurs must have skills to operate the business in order to ensure it success (Lemmon, 2012). Because of this, it is important for this study to focus on the variables that related with E-commerce technology. Therefore, for the technology context, the variables such as relative advantage, compatibility and complexity are seen as suitable variables included for this study.

With regards with the organizational variables, organizational readiness is the most variable tested for the adoption of technology (E-commerce, e-business, mobile and

cloud computing) (Lip-Sam & Hock-Eam, 2011; Shah Alam, Ali, & Mohd. Jani, 2011; Ifinedo, 2011; Boumediene Ramdani et al., 2013; Jahongir & Shin, 2014; Hajli et al., 2014; Rahayu & Day, 2015; Chee et al., 2016). None of these studies tested the relationship between organizational innovativeness and absorptive capacity (as the independent variable) to the adoption of tecchnology.

Also the study need to investigate the context of the organization, wether the SMEs are ready, innovative and able to absorb information on training provided by the government. Furthermore, the government also interested in the understanding of what the SMEs perceived on the role of governments and the support from other parties to facilitate the activities.

Entrepreneurship is very important to bring stability to the communities in the conflict war area (SPARK, 2013). Regardless of how bad the situation in the affected area, the economy activities must not be abandoned (Alexander, 2012) because it is entrepreneurship related activities that allows these area to handle the issue of poverty (SPARK, 2013). Furthermore, study in Iraq also found that building the local business and homegrown entrepreneurship can help to reduce the violence in this fragile environment (Lemmon, 2012). Hence, more studies related with SMEs needed and the suitable variables required to represent the SMEs situation in Iraq.

Combining the information gained from the interviews, literatures and the related report, study related with E-commerce adoption also must looking at the business readiness. Innovation is very important in the conflict affected area because the situation require business's owners to be more creative in doing their business operations in with limited resources, including human and financial resources (SPARK,

2013). In order to handle this situation, business's owner also must ensure that they have the ability to acquire business skills related with this new business operations in E-commerce (Lemmon, 2012). Therefore, for the organizational context fot this study, the organization readiness, organization innovativeness and absorptive capacity are seen as suitable variables tested in this study.

Moreover, for the environmental variables, most of these studies tested role of government or government support as the independent variable (Chatzoglou & Chatzoudes, 2016; Chee et al., 2016; Awiagah et al., 2015; Jahongir & Shin, 2014; Saedi & Iahad, 2013; Ifinedo, 2011) as compared to perceived trust or relational trust (Sila & Dobni, 2012). However, this review shows that none of these variables were tested in the civil conflict affected area. Also, the government must play a very important role in the conflict affected area. The government must ensure that even though the country is facing the political instability, but the activities related with economy must not stopped (Alexander, 2012). Also, it is important to ensure the partnership through the collaboration activities to foster the business (SPARK, 2013). Hence, for this study, another two variables under environmental context that were used in this study.

Hence, the researcher concluded that the inclusion of technological variables (relative advantage, compatibility, complexity), organizational variables (organizational readiness, organizational innovativeness, absorptive capacity), environmental variables (role of government and relational trust) and civil conflict to the adoption of E-commerce in one research setting contributes to the development of theories and literatures related with the technology adoption, particularly E-commerce adoption.

2.7. Perspectives in E-commerce Adoption

In E-commerce adoption research, there are different perspectives that have been considered to investigate and to analyses the influencing factors, namely efficiency choice perspective, institutional perspective, integrative perspective, and social exchange perspective. The first perspective is oriented to examine intra-organizational factors (Alsaad, Mohamad, & Ismail, 2014; Khalifa & Davison, 2006; Messerschmidt & Hinz, 2013). The second perspective examines the impact of the institutional environment (Currie, 2009; Messerschmidt & Hinz, 2013; Pearson & Keller, 2009; Yoon & George, 2013). The third perspective integrates the first and second perspectives. Finally, the fourth perspective is social exchange (Alsaad et al., 2014; Oliveira & Martins, 2011; Yoon & George, 2013).

The development of theories in technology adoption related with E-commerce adoption influences by the four perspectives namely efficiency choice, institutional, integrative and social exchange. The later section discuss about these perspectives.

2.7.1. Efficiency-Choice (Rational Perspective)

Efficiency-choice (rational perspective) focuses mainly on technological and organizational variables (Barrett et al., 2013; Alsaad et al., 2014). This perspective argue that adoption of innovation considers as an appropriate decision and has influenced by external factors of the adopters (Lyytinen & Damsgaard, 2011). They predict that innovation is adopted after the decision makers taking considerations of related costs to invest and benefits to from these adoption (Hillebrand et al., 2011). The degree of innovation appropriateness, such as E-commerce encourages give a big

impact to the decision among potential adopters, where appropriateness of innovation is determined by evaluation of desirability of integrating this innovation in their operations and firms capability to adopt the technology (Alsaad et al., 2014).

Moreover, related to the innovation desirability, these potential adopters will look into several issues, like the innovation characteristics to recognize the adoption of E-commerce is an appropriate choice before making their decision related with the innovation (Alsaad et al., 2014: Lyytinen & Damsgaard, 2011). Therefore, the higher believe of the innovation appropriateness among potential adopters, the higher the adoption of the innovation among them (Ansari et al., 2010; Hillebrand et al., 2011; Lyytinen & Damsgaard, 2011; Rogers, 2003). Additionally, past literatures claims that there are several theories that associated to the evaluation of innovation characteristics such as Technology-Task-Fit (TTF), Technology Acceptance Model (TAM), Reasoned Action Theory (TRA), Theory of Planned Behavior (TPB) and Diffusion of Innovation (DOI) (Lyytinen & Damsgaard, 2011).

In conclusion, this perspective claims that the decision to adopt the technology based on a rational behavior, where the potential adopter able to decide based on what they think best for their operations. The potential adopter rely his decision based on cognitive state related innovation desirability and its capability to adopt such technology, hence this perspective is almost ignored the influence of external parties.

2.7.2. Institutional Perspective

The second perspective focuses on the influence of institutional environment on decision to adopt. Researchers considered an institutional theory as a lens to investigate

the effects of business environment. This perspective assumes that organization's decisions and behaviors cannot be explained by emphasizing only on the rational actions of managers (Hertwig, 2012; Heugens & Lander, 2009). The researchers argued that organizations accept and follow the social norms to gain organizational legitimacy regardless the actual impact of the innovation on the performance (Hertwig, 2012).

In their seminal work, Dimaggio and Powell (1983) suggested that there are three processes by which an innovation became socially accepted namely; coercive, mimic, and normative pressures. Coercive pressures refer to pressures exerted on organizations by other organizations upon which they are dependent. Mimetic pressures appear at times of uncertainty, when organizations tend to model themselves on other organizations in their fields that are perceived to be more legitimate or successful. Normative pressures are about pressures exerted by professionalization such similar educational backgrounds, inter-organizational networks, and mimetic behaviors in a profession (Hertwig, 2012). Those pressures make organizational practices and organizational innovations become more socially accepted among particular population. However, empirical research has shown that institutional pressures need a long time to be established in a particular environment. Therefore, many researchers found that institutional pressures play a significant role only in the later stages of diffusion (Shih, 2012).

In addition to the institutional pressures, information system researchers have found multiple variables in organization environment that have a significant influence adoption behavior (i.e. E-commerce). These are, industry pressure (Ali, Kurnia, & Janahi, 2010), vendor support, suppliers support (Hossain & Quaddus, 2010, 2011),

government support, legal environment, social and culture (Tsai, Lai, & Hsu, 2013; Zhu & Thatcher, 2010), network externality (Cao & Yang, 2016; Lanzolla & Suarez, 2012), and competition (Ifinedo, 2011) have also been examined.

In summary, institutional perspective explains how E-commerce adoption is constrained by institutional forces. An institutional force provides more insights into the complex process of innovation adoption in business organization where the adoption is not only an internal decision but also influenced by external environments. The next section elaborates on how researchers integrate the previous perspectives to predict the E-commerce adoption.

2.7.3. Integrative Perspective

In order to explain how adoption decision is neither entirely goal-oriented nor unique, to institutional pressure, several studies have integrated the rational and institutional perspective into a single theoretical framework (Messerschmidt & Hinz, 2013; Oliveira & Martins, 2011; Venkatesh & Bala, 2012; Yoon & George, 2013). One of the frameworks that combine both perspectives is the Technological–Organization–Environment (TOE). The TOE classifies innovation characteristics as technological factors, organizational characteristics and leadership characteristics as organizational factors, and institutional pressures are considered as environmental factors (Oliveira & Martins, 2011; Yang, 2013).

In general, most of prior studies follow this perspective. It explains high percentage of adoption variance. Also it permits researchers to include a wide range of variables under each context (Baker, 2012; Oliveira & Martins, 2011; Teo et al., 2009). In summary,

using this perspective to examine the adoption of E-commerce could be a good starting point. It holds the causality of rational and institutional perspectives. The next section describes the last perspective that is used to demonstrate the adoption of E-commerce.

2.7.4. Social Exchange Perspective

This view is provided by social exchange theorists. They provide a complementary insight into the adoption of E-commerce. They understood the adoption of E-commerce as a collective decision that involved two parties (buyer and supplier) or (buyer and customer s. No adoption can take place without participation of both parties (Ali et al., 2010; Lyytinen & Damsgaard, 2011). Buyer and supplier often have different perceptions about the adoption of E-commerce. Therefore, they make the technology adoption more complex and difficult to be achieved (Kim, Park, Ryoo, & Park, 2010; Turker, 2014). Scholars claim that collective decision can be explained very well by the relationship of the related factors, particularly power and trust (Al-hakim, 2012; Chong, 2013).

In this perspective, researchers rely on Resource Dependency Theory and Social Exchange Theories to explain the role of relationship characteristics (Son et al., 2005; Son et al., 2008). Prior studies have identified several aspects of relationship characteristics that influence the decision to adopt E-commerce. Al-hakim (2012); Hart and Saunders (1997) and Hart & Saunders, (1998) stressed on the role of trust. Chong (2013) suggested that information sharing, trading partner power, in addition to trust, play significant role in adoption behavior.

In summary, researchers in this perspective focus on relationship factors, in particular, trust and dependency. This is because E-commerce is a reflection of the existing relationship between partners. In this manner, these factors provide complementary view on E-commerce adoption.

2.8. Underpinning Theories

There are many theories that were used to explain technology adoption. Among them are Behavioral Theories, Diffusion of Innovation Theory, Technological, Organizational and Enviromental Framework, Institutional Theory, Resource Dependency Theory, Transaction Cost Theory, Technology-Task-Fit Theory and Social Exchange Theory. These theories represented by perspectives that have been discussed in the earlier section. However, this research framework for this study has been developed based TOE framework and underpinned by DOI and RDT. The following section discuss theories that related with this study. A brief summary of these theories is presented in Table 2.5. The details is explained under the following sections.

Table 2. 5
Underpinning Theories Used in Prior Studies

Theory	References	Perspectives
Behavioral Theories (TAM,TRA,TPB,UATUT)	(Abadi, Kabiry, & Forghani, 2013; Aboelmaged, 2010; Abou-Shouk, Lim, & Megicks, 2016; Agag & El-Masry, 2016; Awa, Ojiabo, & Emecheta, 2015; Chan & Chong, 2012; Chang, Fu, & Jain, 2015; Chong, 2013; El-Gohary, 2012; Gangwar, Date, & Raoot, 2014; Grandón, Nasco, & Mykytyn, 2011; Hajer & Yusof, 2013; Nasri & Charfeddine, 2012; Yu, 2012)	Efficiency-Choice
DOI Theory	(AlGhamdi, Nguyen, Nguyen, & Drew, 2012; Ghobakhloo et al., 2011; Hossain & Quaddus, 2010; Jahongir & Shin, 2014; Jamshidi, Hussin, & Lai Wan, 2015; Kurnia, Choudrie, et al., 2015; Picoto, Bélanger, & Palma-dos-Reis, 2014; K. Zhu, Kraemer, & Xu, 2003; K. Zhu & Kraemer, 2005; K. Zhu et al., 2006)	Efficiency-Choice
TOE Framework	(Ahmad et al., 2014; Al-Somali et al., 2010; Al-Somali et al., 2015; Almoawi & Mahmood, 2012; Alshamaila et al., 2013; Awa, Ojiabo, et al., 2015; Awiagah et al., 2015; Chan & Chong, 2012; Chatzoglou & Chatzoudes, 2016; Gibbs & Kraemer, 2004; Ifinedo, 2011; LI , Zhao, & Yu, 2015; P. Li & Xie, 2012; Lip-Sam & Hock-Eam, 2011; Osakwe, Chovancová, & Agu, 2015; Boumediene Ramdani et al., 2013; Saedi & Iahad, 2013; Sarkar, 2009; Scupola, 2009; Sila, 2013; Sila & Dobni, 2012; Venkatesh & Bala, 2012; Wang et al., 2016; Wen & Chen, 2010; Yeh et al., 2014)	Integrative Perspective
Institutional Theory	(Gibbs & Kraemer, 2004; Hertwig, 2012; Ke, 2006; Ke, Liu, Wei, Gu, & Chen, 2009; Kshetri, 2008; Kurnia, Karnali, et al., 2015; Ravichandran, Han, & Hasan, 2009; Standing, Sims, & Love, 2009; Teo & Pian, 2003; Thatcher, Foster, & Zhu, 2006; Tsai et al., 2013; Wong et al., 2009)	Institutional Perspective
Resource Dependency Theory	(Ali et al., 2010; Alsaad et al., 2014; Hart & Saunders, 1997; Hart & Saunders, 1998; Q. Huang, Fang, & Liu, 2013; Ke et al., 2009; Kurnia, Karnali, et al., 2015; Nagy, 2006; Son et al., 2005; Son et al., 2008; Zhang & Dhaliwal, 2009)	Social Exchange Perspective
Transaction Cost Theory TCT Theory	(Grover & Saeed, 2007; Iskandar, Kurokawa, & LeBlanc, 2001a, 2001b; Ke et al., 2009; Liu, Min, & Ji, 2008; Mithas, Jones, & Mitchell, 2008; Son et al., 2005; Son et al., 2008)	Efficiency-Choice
Technology-Task-Fit TTF Theory	(Cao, Wiengarten, Humphreys, & McHugh, 2013; Setia, Sambamurthy, & Closs, 2008)	Efficiency-Choice
Social exchange theory	(Hart & Saunders, 1997; Hart & Saunders, 1998; Son et al., 2005; Son et al., 2008)	Social Exchange Perspective

For this study, the researcher developed the research framework using TOE framework and underpinned by DOI and RDT. The discussion of these theories presents in the next section of this thesis.

2.8.1. Resource Dependence Theory (RDT)

The RDT attempts to answer the question of why organizations enter into inter-organizational arrangement. (Drees & Heugens, 2013). The RDT theorists postulate that an organization's environment provides "critical" resources desired by an organization, where "critical" resources refer to the extent to which an organization is able to continue its functions in the absence of the specific resource and/or in the absence of the market for its output (Pfeffer & Salancik, 2003).

The central idea of the RDT is that whoever controls the critical resources has the power over those actors who need these resources (Drees & Heugens, 2013). This theoretical hypothesis corresponds with the Power Dependency theory by Emerson (1962), where Emerson argued that the greater the dependency of actor X upon actor Y, the more power actor Y has over X. He suggested that the source of power is not the actor's attribute, rather, it is an attribute of social relations between actors because it exists implicitly in the other's dependency.

Theorists argue that dependency in terms of critical resources endangers firm's decision-making autonomy which, in turn, increases firm's uncertainty (Drees & Heugens, 2013). Autonomy refers to firm's freedom to make its decisions about the allocation and use of its internal resources without regard or reference to the expectations or demands of potential partners (Oliver, 1991). Firms attempt to mitigate

others' power over them. Therefore, the RDT proposes that firm responses to resource deficiencies by restructuring or managing their dependencies, so it to reduce uncertainty related to these resources (Drees & Heugens, 2013; Hillman et al., 2009).

There are several tactics to restructuring and managing dependencies. One of most popular tactics is 'constraint absorption'. It means giving the rights to control the resources that create dependencies to the dependent actor (Casciaro & Piskorski, 2005). Organizations can absorb external constraint (resources) by either 'complete absorption' such as mergers and acquisitions or 'partial absorption' by engaging in inter-organization arrangements such as electronic linkage (E-commerce) (Casciaro & Piskorski, 2005; Chatterjee & Ravichandran, 2013).

In fact, the relationship between resource dependency and entering inter-organization arrangements stands at the center of the debate among resource dependency theorists. On one hand, scholars predict that organizations characterized by a high degree of dependence on others are more likely to absorb the sources of dependence (Drees & Heugens, 2013). On the other hand, scholars argue that in case of high level of dependency, the dependent organization is likely to be more motivated but less able to absorb constraint (Casciaro & Piskorski, 2005).

To demonstrate this puzzling issue, Pfeffer and Salancik (2003) and Emerson (1962) argued that 'whoever controls critical resources has the power over those actors who need these resources' (Pfeffer & Salancik, 2003, p. 44). In such case, if the less power firm is likely to absorb external constraints as suggested by the first view, the higher power firm will not relinquish its power advantage and favorable exchange conditions that accompany it (Casciaro & Piskorski, 2005; Gargiulo, 1993). The higher power firm

is, therefore, likely to resist the lower-power organization's attempt at constraint absorption. The less powerful firm is unlikely to overcome the resistance of the dominant firm, which is, by definition, in a better position to impose its desire on the power-disadvantaged party (Casciaro & Piskorski, 2005).

The RDT represents another useful lens to understand organizational behavior in terms of actions and decision making by focusing on the influence of the external environmental context (Drees & Heugens, 2013; Hillman et al., 2009). The RDT theorists contend that organizations enter coalitions to influence and control behavior and do best when they can use resources generated or owned by others in a way that maximizes their own independence and control (Pfeffer, 1981). For example, a foreign supplier can transfer inputs and associated technical expertise to an SME for an agreed price: in return the SME usually gains complete ownership and control over those resources (Hessels & Parker, 2013).

Overall, internationalization and collaboration strategies differ in terms of the types of resources they can command (as emphasized by resource-based view (RBV)) and the dependency relationships they stimulate (as highlighted by RDT). For constrained firms, it is not only relevant what resources a dependence relationship or coalition generates, but also how costly those relationships are. For example, the SMEs that are constrained by limited demand may not be able to afford the extra costs involved in setting up an export division or engaging in formal inter-firm collaborations. The latter can entail high transaction, monitoring and enforcement costs, (Haahti, Madupu, Yavas, & Babakus, 2005). As a result, foreign supply relationships and informal collaborations may be the preferred strategies in these cases (Hessels & Parker, 2013).

The RDT is particularly relevant for explaining inter-organizational relationships and how organizations manage their inter-dependency to access critical and important resources, but few organizational studies have utilized RDT (Casciaro & Piskorski, 2005). As such, the RDT is used to complement the other selected theories in understanding the underlying mechanism of the influence of other organizations within the external environmental context of TOE (Kurnia, Karnali, et al., 2015).

2.8.2. Diffusion of Innovation theory (DOI)

Tornatzky and Klein (1982) stated that the Diffusion of Innovation Theory (DOI) from Rogers has been used since the 1960s to study a variety of organizational innovation. Most research has adopted a definition of innovation diffusion similar to that of Rogers (1995), which is, "the process by which an innovation is communicated through certain channels over time among the members of a social system" (p. 5). As stated in this definition, there are four elements of innovation diffusion: innovation, time, communication channels, and social system. Table 2.6 shows the definition of each element.

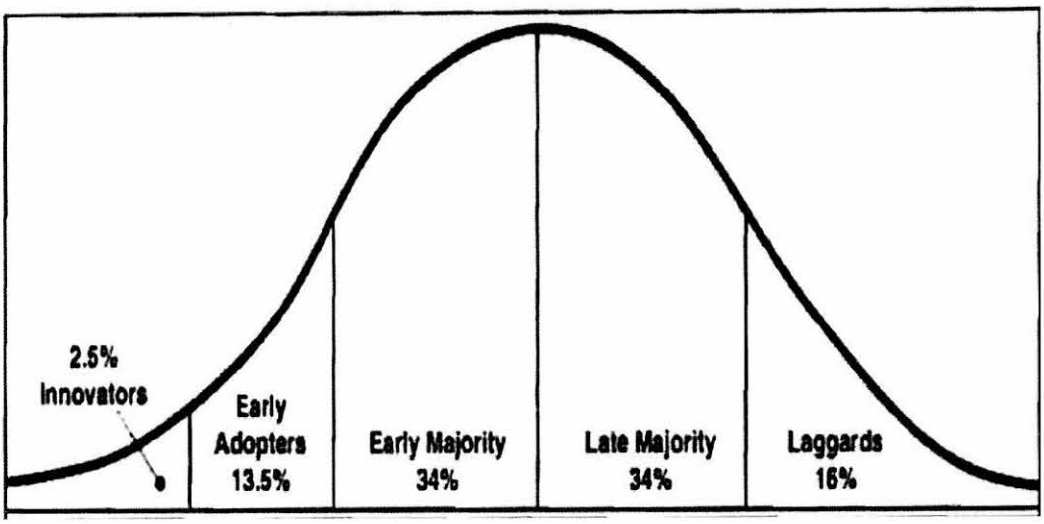
Table 2. 6
Diffusion Innovation Elements by Rogers (2003)

Items	Description
Innovation	An idea, practice, or project that is perceived as new
Communication Channels	A process in which participants create and share information with one another in order to reach a mutual understanding.
Time	Length of time required to pass through the innovation decision process
Social System	A set of interrelated units engaged in joint problem solving to accomplish a common goal

In order to achieve the success of this innovation and its diffusion, these elements are considered to complement each other. Therefore, the failure of any of them makes it difficult to adopt the diffusion of innovation by individuals or firms (Chang et al., 2015).

According to Rogers (2003) definitions, communication-suitable channels is the first step and the main base for moving towards the adoption of innovation. In fact, the Internet is regarded nowadays as the most effective channel of communication used at the level of individuals or firms. Its effectiveness is highlighted when constant contact is crucial around the clock, especially when communication between users is geographically aloof. In addition, it is the most rapid low-cost way to exchange information between users compared with other traditional communication channels, which are time-consuming and face-increasing costs.

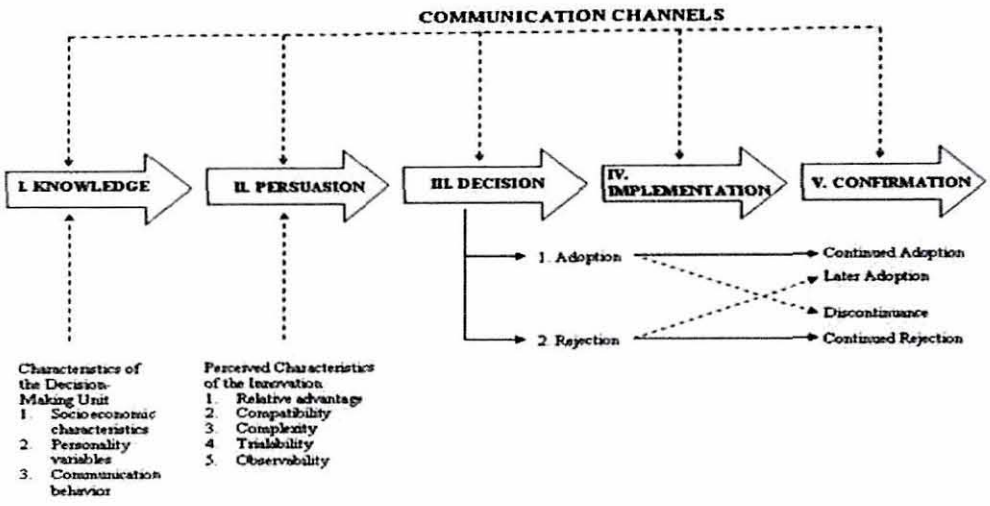
The second element of the elements referred to Rogers in the process of innovation diffusion was time, which he considered to be a helpful factor and complementary in the adoption of this process. In order to scientifically measure time in the adoption of innovation diffusion, Rogers explained that this can be done by setting fixed percentages synchronized with time. This ratio represents the class or level that defines the acceptance and adoption of innovation by individuals within the social system. For example, Rogers classified five levels for those individuals within the social system combined with a gained percentage as shown in Figure 2.1, which is known as Rogers' Innovation Adoption Curve. The curve begins with innovators (2.5%), early adopters (13.5%), early majority (34%), late majority (34%), and finally, after a period of time for each level comes the last level of laggards (16%).



Source: Rogers (1995)

Figure 2. 1
Rogers' Innovation Adoption Curve

According to this classification, Rogers mentioned that the adoption of an innovation is a decision making process. It involves activities of information searching and processing. The adoption process goes through five stages. This process, as depicted in Figure 2.2, starts from the knowledge stage where the potential adopters become aware of the existence of innovation. In the next stage, the persuasion stage, the potential adopter engages in information search and gathering activities to shape favorable or unfavorable attitude toward an innovation. The potential adopter is heavily influenced by the innovation characteristics in this stage. Subsequently, the potential adopter in the decision stage weighs the advantages and disadvantages of using an innovation and then decides whether to accept or reject the focal innovation. Rogers and Kim (1985) argued that the innovation characteristics account for 49% to 85% rate of the adoption of any innovation. If the innovation is accepted, the adopter will proceed to the implementation stage where an innovation will be placed into practice.



Source: (Rogers, 2003)

Figure 2. 2
Diffusion of Innovation Process Model

Therefore, he added that these levels go through five stages, including the following:

Knowledge: This stage is important and has a proportional impact, since it was the starting point in the decision to adopt or reject the innovation. In other words, when the information is more aware and understandable to the adopter, this would enhance the decision to adopt and the adopter would then continue to the next stage and vice versa. Therefore, it is important to provide enough information at this initial stage to assist the adopter in positively making the decision with respect to the adoption.

Persuasion: The persuasion of adopting new processes or ideas in business is based on the clarity of vision of the adopter. In addition, the adopter's knowledge and the information that has been provided will give him or her the opportunity to make the decision convincingly. In this way, the chance is still available for the adopter to accept

the adoption and continue to the next stage, as long as he or she is provided with adequate information making him or her freer without confusion to make a decision.

Decision: Rogers (2003) stated that this stage is the most difficult due to the fact that the decision making is considered to be a watershed between acceptance and continuation on the one hand, and rejection and neglect on the other. This is the stage where the nature of the individual and the reactions surrounding him will affect his decision. Moreover, in this stage, the adopter will compare the benefits gained and the damage that results from the decision to adopt. On the other hand, achieving positive results will assist the adopter in continuing the process of implementing the innovation.

Implementation: At this stage, Rogers (2003) pointed to the importance of supporting the adopter as much as possible and of attempting to prompt confidence in the adopter's decision to accept the innovation. In addition, he or she should be given a chance to know more about the possible benefits and costs to be had from this adoption - in particular, any potential negative and counterproductive effects that may lead the adopter to go back on the decision to adopt. On the other hand, the opposite is true if it becomes clear that this application was good for him or her and this will assist the adopter in becoming more convincing and confirming the continuation.

Confirmation: At this stage, the adopter who ultimately made the decision to adopt has realized the benefits from the application for this adoption and can now be looking forward to other applications that could bring further benefits. However, Rogers (2003) stated that the adopter may be disappointed due to the long time that may be spent without achieving other positive outcomes. In addition, some negative external responses from pessimists may affect the adopter's willingness to continue. These

reasons may lead the adopter to end the application at this stage. Therefore, focusing on supporting and assisting the adopter is very important in even the advanced stage.

Prior studies have used DOI to demonstrate the adoption of E-commerce. Researchers have confirmed its ability to explain the E-commerce decision, like, Ruivo et al. (2012) believed that DOI has the potential to provide a favorable framework that covers the IT adoption processes of SMEs, thus reflecting the SMEs heterogeneity. Because of that, E-commerce has been considered to be an important innovation by many scholars (Daniel & Wilson, 2002).

Some of the characteristics of DOI are appropriate for this study. In addition, DOI has been used in many previous studies at the level of individuals or firms, particularly SMEs. Moreover, its factors help to understand the trend of the decision maker towards the implementation of new mechanisms in the workplace, particularly the information technology mechanisms such as E-commerce (Tan, Choy Chong, Lin, & Cyril Eze, 2009). Table 2.7 addresses some of studies that have used the DOI theory. The DOI appears to be the dominant theoretical lens used by scholars to explain E-commerce adoption for SME context across many countries (Kurnia, Choudrie, et al., 2015). Thus, the DOI fits well within the TOE framework, which can be used to understand the influence of technological, organizational and environmental factors (Oliveira & Martins, 2011).

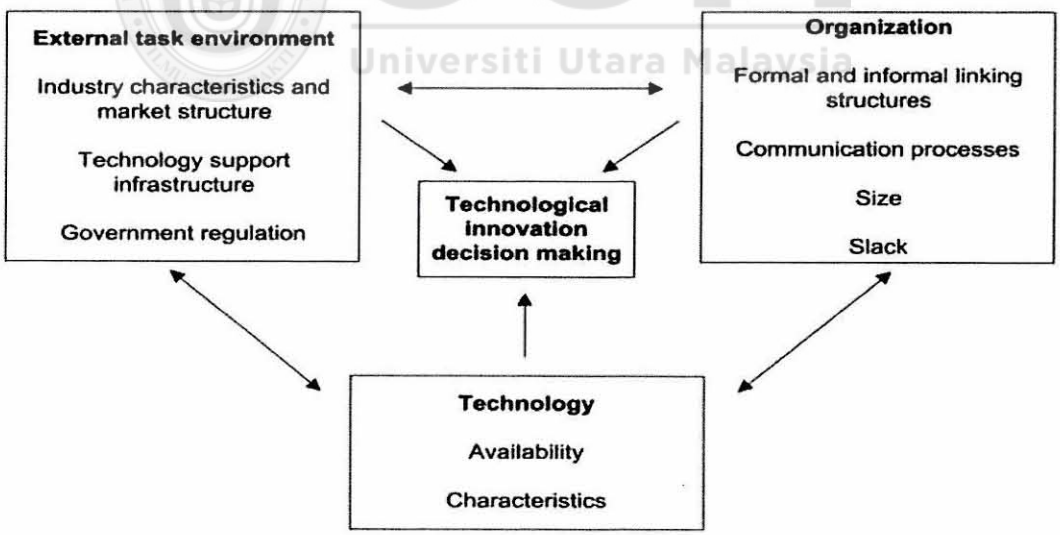
Table 2. 7
Studies That have Used Diffusion of Innovation (DOI)

Study	Type of Company	Study object
Al-Qirim (2005)	129 SMEs	E-commerce Adoption
Jeon, Han, and Lee (2006)	204 SMEs	E-Business Adoption
Kohn and Hüsig (2006)	33 SMEs	Innovation Software
Ifinedo (2011)	84 SMEs	Internet/E-Business Technologies Adoption
Shah Alam et al. (2011)	200 SMEs	E-commerce Adoption
Almoawi and Mahmood (2012)	78 SMEs	E-commerce Adoption
Kurnia, Choudrie, et al. (2015)	125 SMEs	E-commerce Technology Adoption

By contrast, some researchers have refuted the ability of this theory to explain the adoption of E-commerce. They argue that the adoption of E-commerce is a collaborative behavior. In such case, there are two independent organizations adopting E-commerce at the same time and depend on each other's actions in exploiting it (Ali et al., 2010; Lyytinen & Damsgaard, 2011). They argue that DOI have inadequate constructs to deal with collaborative behavior such as trust and Government support (Lyytinen & Damsgaard, 2011). Therefore, the major deficiency in this theory lies in the lack of respect for inter-organizational determinants (Lyytinen & Damsgaard, 2001, 2011). Parker and Castleman (2009) and Frank, Zhao, and Borman (2004) argued that DOI theory does not provide a lens through which to study these complex social and relational dimensions, therefore for this study, DOI will be integrated with the RDT, represented by TOE to present the research proposition.

2.8.3. Technological, Organizational and Environmental (TOE) Framework

The TOE is one of the most commonly used frameworks to explain technology adoption. TOE was developed based on Contingency Theory, which postulates that an effective organizational structure should fit with its organizational and environmental needs (Lawrence & Lorsch, 1967). Tornatzky and Fleischer (1990) emphasized that the adoption of an innovation, in an enterprise is a multidimensional decision influenced by factors from several contexts (Tornatzky & Fleischer, 1990). In this framework, Tornatzky and Fleischer identified and classified the factors that influenced technological adoption into three contexts: the technological, the organizational, and the environmental context. See Figure 2.3. The three contexts of this framework act as opportunities and/or constraints for technological innovation among organizations (Tornatzky & Fleischer, 1990).



Source: (Tornatzky & Fleischer, 1990)

Figure 2. 3
Technological, Organizational and Environmental (TOE) Original Framework

Technological context refers to the pool of technologies that are available to the organization including current technology and the technology available in the market. Technological context determines the ability of the organization to move towards new innovation (Ahmad et al., 2014; Oliveira & Martins, 2011; Scupola, 2009). Characteristics of technology itself determine the innovation appropriateness while current technologies facilities or inhabits the technological change that could be undertaken by the organizations (Baker, 2012; Ghobakhloo et al., 2011; Lyytinen & Damsgaard, 2001, 2011).

Organizational context refers to the organization's characteristics, attributes, and resources. These factors may hinder or facilitate the adoption of innovations (e.g. E-commerce adoption). Common organization characteristics include centralization, formalization, firm size, managerial structure, amount of available slack resources, and the quality of its human resources (Tornatzky & Fleischer, 1990).

Environmental context refers to the arena where the organization conducts its businesses. Organizational environment may be considered as either constraints or opportunities for technological innovations (DePietro, Wiarda, & Fleischer, 1990). Competitors of a business organization, government intervention, and characteristics of the business's industry are environmental factors that influence the organization's adoption behavior.

The TOE framework is a useful analytical tool in explaining the adoption of innovation by organizations, as well as firms (DePietro et al., 1990). The TOE framework can help explain the interrelationships between different constructs in one dynamic framework (Boateng, Molla, & Heeks, 2009), whether internal or external to an organization or

firms (Jarvenpaa & Leidner, 1998; Montealegre, 1999). Moreover, it suggests why certain kinds of innovations are more successful in a given organization (firms) then others (Molla & Licker, 2005b). TOE also provides evidence that this framework is strengthened further when contextual variables are integrated into the theoretical model (Sila, 2013; Sila & Dobni, 2012). For example when the TOE framework, supplemented with inter-organizational factors (Sila & Dobni, 2012), as environmental factors, the framework will explain a comprehensive model that effectively fit based on the internal and external context that influence the decision to adopt the technology. Otherwise, the framework only allows limited flexibility to capture the dynamic changes of various factors and their impacts throughout the course of the adoption process over time (Kurnia, Karnali, et al., 2015).

In TOE framework, the dependent variable can be adoption, acceptance, receptivity, business performance, business value, or a combination of other relevant variables (Davis & Vladica, 2006). Inclusion of technological, organizational and environmental variables has made TOE advantageous over other adoption models in studying technology adoption, technology use and value creation from technology innovation (Hossain & Quaddus, 2010; Oliveira & Martins, 2011; Ramdani, Kawalek, & Lorenzo, 2009; Zhu & Kraemer, 2005). Also, it is free from industry and firm-size restrictions (Wen & Chen, 2010). Hence, it provides a holistic picture for user adoption of technology, its implementation, foreseeing challenges, its impact on value chain activities, the post-adoption diffusion among firms, factors influencing business innovation-adoption decisions and to develop better organizational capabilities using the technology (Gangwar et al., 2014; Salwani, Mohamed, Daud Norzaidi, & Choy Chong, 2009; Wang, Wang, & Yang, 2010).

Previous studies have also used this framework in the context of IT adoption as technology adoption in SMEs. As such, a study in Middle East showed the usefulness of the TOE framework for understanding the diffusion of a complex IS innovation to predict the factors influencing firms to adopt technology innovation (Al-Somali et al., 2010). This is consistent with Scupola (2003) who postulated that TOE is a powerful and robust predictive model that may be used in a variety of contexts in the region including Iraq .

Moreover, TOE framework also serves as a strong foundation for the study of E-commerce (Ghobakhloo et al., 2011; Sila, 2013;). This framework provides a valid theoretical guideline to study firms' E-commerce usage patterns (Sila & Dobni, 2012), as well as investigating various factors affecting the adoption of E-commerce, particularly among SMEs (Kurnia, Karnali, et al., 2015).

It can be seen that adoption of E-commerce among SMEs is rather very slow principally due to lack of experience and little awareness of the strengths of some IT infrastructures. TOE provide worthy insights into how SMEs adopt E-commerce (Awa, Ojiabo, et al., 2015), where analysis showed that the TOE model is a robust tool for predicting enterprise applications adoption in SMEs (Boumediene Ramdani et al., 2013). For example, TOE appears to be a good framework to predict the E-commerce adoption among SMEs in Malaysia, however there are many uncover factors need to be explore in order to explain the studied areas (Chee et al., 2016).

The TOE framework has helped explore various factors affecting the adoption of E-commerce technologies in different countries (Kurnia, Karnali, et al., 2015). Osakwe et al. (2015) showed that to the TOE framework can fit perfectly into the study of

innovative technology adoption in developing countries. Also K. Zhu et al. (2003) drew upon the TOE framework to identify facilitators and inhibitors for e-business adoption decisions by European firms and demonstrated the solid theoretical bases of the TOE framework for determining facilitators and inhibitors of E-commerce adoption.

Some authors used the TOE framework with other theories to understand IT adoption (Ghobakhloo et al., 2011; Hsu, Kraemer, & Dunkle, 2006; Kurnia, Karnali, et al., 2015; Picoto et al., 2014; Sila, 2015; Sila & Dobni, 2012). The integration with other organizational theories in tandem with the TOE framework, enables researchers to examine the extensions of the hypotheses tested in a particular study (Sila, 2015; Sila & Dobni, 2012). In a broad sense, it can be said that TOE framework to be suitable and useful when using organizations as the unit of analysis because it enables us to focus on certain contextual factors and apply relevant theories systematically and complementarily to advance the understanding of the impact of those factors (Kurnia, Karnali, et al., 2015).

Studies based on TOE framework have several limitations too. According to Dedrick and West (2003), TOE framework is just a taxonomy for categorizing variables and it does not represent an integrated conceptual framework or a well-developed theory, hence, there is a requirement of a more robust framework to study organizational adoption. Low et al. (2011) also highlighted that TOE framework has no major constructs in the model and the variables in each context. TOE framework is limited in its explanatory power of technology adoption as well as it can be seen in case of EDI adoption where around half of the percentages of EDI adoption variance remain unexplained (Musawa & Wahab, 2012). Also, Wang et al. (2010) mentioned that TOE

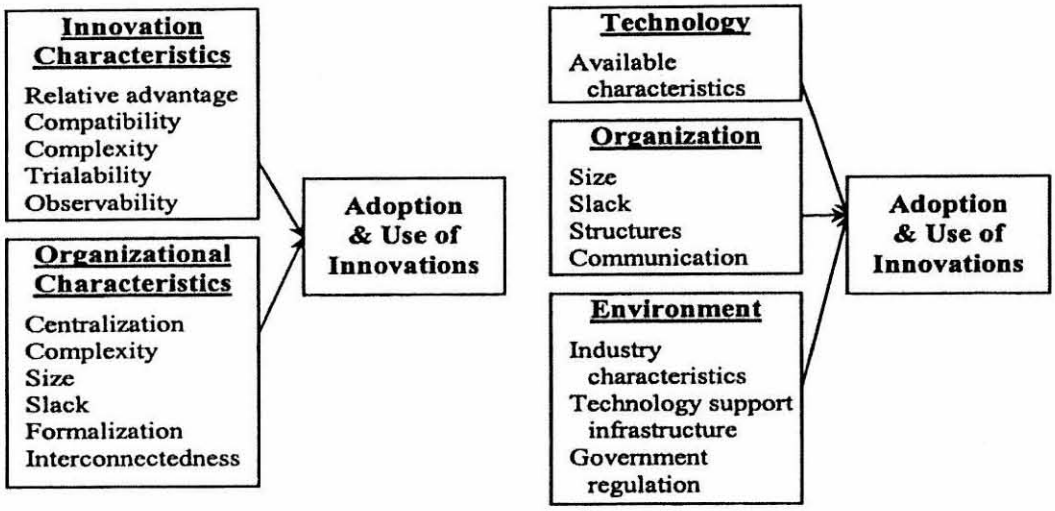
framework has unclear major constructs and the variables of TOE framework may vary with the context. Hence, some other variables should be included to enrich TOE framework such as sociological variables, cognitive variables, technology readiness (e.g. knowledge management capabilities), ability to leverage IT investment through different channels (e.g. organizational learning), professionals' experience and skills, managerial capabilities of change management, security concerns (e.g. civil conflict), government promotion and factors salient to the country context such as government policy/regulation, technology infrastructure and culture (Gangwar et al., 2014; Hossain & Quaddus, 2011; Jang, 2010; Oliveira & Martins, 2011; Teo et al., 2009; Wang et al., 2010; Wen & Chen, 2010).

Despite the above limitation, TOE framework presents a valuable starting point in analyzing several factors that would help in understanding the innovation adoption behavior. Because it has consistent empirical support, this study will adopt this framework as the main theoretical lens to achieve the objective of this study. TOE framework deeper explanations are required to better understand how contextual factors affect adoption. These cannot be revealed without applying other theoretical lenses. In particular, the rich environmental factors and their significant influence on adoption can only be investigated thoroughly by incorporating adoption theories such as RDT and DOI (Kurnia, Karnali, et al., 2015). The later part of this paper will discuss about the integration of DOI and RDT as the underpinning theory to support TOE framework.

2.8.4. Integrating DOI and RDT to Support TOE Framework

The used of theory on diffusion of innovation (DOI) and Resource Dependency Theory (RDT) to support Technology-Organization-Environment (TOE) framework are viewed as an appropriate theoretical foundation for studying E-commerce in SMEs.

Although Rogers's diffusion of innovation theory seems to be quite applicable to an investigation of innovation use (Prescott & Conger, 1995), researchers continue to search other contexts influencing organizational innovativeness and combine them with Rogers's theory to provide richer and potentially more explanatory models (Prescott, 1995). Tornatzky and Fleisher use a framework similar to Rogers's framework but comprising three categories technology, organization, and environment (TOE) to explain a firm's technological innovation decision making behavior (Tornatzky & Klein, 1982). Their technology and organization categories are parallel to the two categories in Rogers's model, but their framework also includes a new and important component, namely environmental context. The environment context is the area in which a firm conducts its business in the industry, competitors, and dealings with government. The environment presents both constraints and opportunities for technological innovation. The TOE framework makes Rogers's innovation diffusion theory better able to explain within-a firm innovation diffusion. The comparison between DOI Model and TOE Framework is exhibited Figure 2.4



Source : (Rogers, 1995; Tornatzky & Fleischer, 1990)

Figure 2. 4
Comparison of DOI Model and TOE Framework

Limited studies combine these two theories in explaining the adoption of E-commerce among SMEs, but each of them contributes useful insights that are combined into a single theoretical framework for studying the adoption of E-commerce (Hsu et al., 2006). Investigating E-commerce adoption is considered as complicated and it deserves integration of multiple theoretical perspectives (Fichman, 2004; Fichman, Dos Santos, & Zheng, 2014; Reimers et al., 2010). Moreover, advanced techniques are needed to propose more realistic models that allows different effects on adoption to be analyzed (Fichman, 2004). The incorporation of several theoretical perspectives in a single model demands high level of abstractions (Becker, Klein, & Wetzels, 2012; Polites, Roberts, & Thatcher, 2012). This could be realized by increasing the theoretical parsimony and by reducing models' complexity (Becker et al., 2012; Polites et al., 2012). With advanced analytical tools made available, Information Systems (IS) researchers move toward modeling complex theoretical concepts in comparatively simple abstraction (Becker et al., 2012; Polites et al., 2012; Wright, Campbell, Thatcher, & Roberts, 2012).

As to date, little that has been known about integrating DOI and RDT to explain TOE framework among SMEs. A conceptual framework by (Alsaad et al., 2014) integrated DOI and RDT to explain TOE framework in his study related to the adoption of B2B adoption. Another study by (Kurnia, Karnali, et al., 2015) in Indonesia used TOE framework that was underpinned by four adoption theories (including RDT and DOI) found that the negative influence of adoption were explained by the environmental factors.

As such, the research confirms the usefulness of the integration of DOI and RDT to explain TOE framework, especially for studies to identify organizational as their unit of analysis. Combining these frameworks could be useful to researchers who are interested in studying the usage of other technologies at the organizational level of analysis.

In summary, both DOI, RDT and TOE, treat with equal, the importance technology innovation and organizational characteristics when explaining adoption and usage, but TOE provides additional insights since it also includes environmental factors. Thus, in the present research, the author combines these two models to derive a comprehensive research model for business usage and focuses on a set of variables that are the common antecedents in information technology related to business research including E-commerce.

2.9. Factors Affecting E-commerce Adoption

In this section, the focus of discussion concentrates on the most important E-commerce determinants. There are many factors affecting E-commerce adoption. Most of these were discussed under TOE framework that is supported by DOI and RDT. The following section will discuss the variables for the framework. The following section are literatures related with variables used as technological, organizational and environmental in this study. This section also will included the past literatures related with civil conflict.

2.9.1. Technological Factors

According to Tornatzky and Fleischer (1990), definition technology context contains all issues related to technology, whether inside or outside of the company, that could help with innovation adoption in line with their capabilities. Researchers (Abadi et al., 2013; Aboelmaged, 2010; Cao, Jones, & Sheng, 2014) examined a technology context in the studies related to technology adoption, including perceived benefits, perceived barriers, perceived importance of compliance to standards, interoperability, interconnectivity, relative advantage, compatibility, and complexity.

Technology context factors related to E-commerce adoption among SMEs were also found in other studies (Abebe, 2014; Agwu & Murray, 2014; Ahmad et al., 2014), including relative advantage, compatibility and complexity. However, there is a lack of empirical evidence that addresses the moderate link between technology context relationships and E-commerce adoption among SMEs, such as a civil conflict (Khan et al., 2012).

The following section discuss past literatures related with technological variables namely relative advantage, compatibility and complexity.

2.9.1.1. Relative Advantage (Perceived Benefits)

The concept of perceived benefit, performance expectation, relative advantage, and perceived usefulness are used interchangeably in most innovation theories. They are used to reflect the anticipated benefits or efficiencies an innovation adoption, i.e., E-commerce can provide to an organization compared to the old practice or idea (Ahmad et al., 2014; Chan & Chong, 2012; Hossain & Quaddus, 2011; Weber & Kauffman, 2011).

Rogers (2003) defines relative advantage as the degree to which an innovation is perceived as better than the idea it supersedes. He theorizes that potential adopters will perform an explicit or implicit cost benefit analysis. Therefore, potential adopters will adopt an innovation that returns more benefits than the previous idea (Ahmad et al., 2014; Cao & Yang, 2016; Boumediene Ramdani et al., 2013; Rogers, 2003; Tarofder, Marthandan, Mohan, & Tarofder, 2013; Venkatesh & Bala, 2012; Yoon & George, 2013).

A considerable literature examines the influence of relative advantage on adoption behavior as shown in Table 2.8. Despite the soundness of the "Relative Advantage" as important IS adoption indicator (Hameed & Counsell, 2014; Jeyaraj et al., 2009; Tornatzky & Klein, 1982), research results on the effect of relative advantage on adoption of innovation are mixed (Hameed & Counsell, 2014; Ke, 2006). Table 2.8 shows that the earlier studies produced contrasting results regarding the influence of

relative advantage and the researcher concluded that few studies were conducted at Middle East countries, thus require future researchers to test this variable in various setting of E-commerce adoption. See Table 2.8.

Table 2. 8
Selected Studies Related to Relative Advantages Variable

Authors	Dependent Variable	Context	Result	
			Sig	Insig
Hung, Yang, Yang, and Chuang (2011)	E-commerce Adoption	Taiwan	√+*	
Ifinedo (2011)	Internet/E-Business Technologies Adoption	Canada	√+	
(Boumediene Ramdani et al., 2013)	Enterprise Applications	England	√+	
(Alshamaila et al., 2013)	Cloud Computing Adoption	England	√+	
(Picoto et al., 2014)	M-Business	Portugal	√+	
(Ahmad et al., 2014)	E-commerce Adoption	Malaysia	√+	
(Sin et al., 2016)	E-commerce Adoption	Malaysia	√+	
(Shah Alam et al., 2011)	E-commerce Adoption	Malaysia	√+	
(Kurnia, Karnali, et al., 2015)	E-commerce Adoption	Indonesian	√+	
(Rahayu & Day, 2015)	E-commerce Adoption	Indonesian	√+	
(El-Gohary, 2012)	E-Marketing Adoption	Egypt	√+	
(Ghobakhloo et al., 2011)	Adoption of E-commerce Applications	Iran	√+	
(Gangwar et al., 2015)	IT Adoption	India	√+	
(Almoawi & Mahmood, 2012)	E-commerce Adoption	Saudi Arabia	√+	
(Wang et al., 2016)	Adoption of Mobile Reservation Systems	Taiwan		√
(Jahongir & Shin, 2014)	E-commerce Adoption	Uzbekistan		√
(Awiagah et al., 2015)	E-commerce Adoption	Ghana		√
(Chee et al., 2016)	E-commerce Adoption	Malaysia		√
(Yoon & George, 2013)	Intent to Adopt Virtual Worlds	USA		√

*+ the direction of relationship is positive

Researchers attempt to find an explanation for these unexpected results. Some of these attempts have interpreted this issue based on rhetorical explanation while others have solid theoretical justification but without empirical evidence. For example, Wang et al. (2010) reported that in order to decide whether to accept or to reject new technology, firms seem to pay considerable interest on the adoption inhibitors such as risks or problems, i.e., complexity, more than innovation advantages. They claim that firms will prefer to maintain their current systems if they believe that they do not have sufficient human, technical, and financial capabilities to adopt new technology.

Gao, Leichter, and Wei (2012) and Karahanna, Agarwal, and Angst (2006) found empirical support for the previous arguments. They found that perceived organization readiness and perceived ease of use (opposite of complexity) will increase the perception of Relative Advantage. For that reason, Wang (2010) contend that lack of organizational and financial capabilities could make perception of Relative Advantage as an insignificant discriminator between adopters and non-adopters.

However, Seyal and Rahman (2003), the story is different. They suggest that the effect of Relative Advantage still has a strong influence on adoption decision but its influence depends mainly on the prior awareness about characteristics of technology and its capability. Thus, inadequate awareness about innovation characteristics may lead to restricting the influence of perception of Relative Advantage on the adoption behavior.

Other possible justification for this issue is provided by Geri and Ahituv (2008). They confirm that two types of benefits are supposed to affect the adoption of E-commerce, namely strategic and transactional benefits. They found that only strategic benefits have influence on adoption of such technology while transactional benefits have no

influence. Furthermore, Kuan and Chau (2001) divide the perceived benefits into two types which are direct and indirect. They discovered indirect benefits to be an insignificant factor.

In summary, relative advantage was the main construct in several adoption theories. It has significant influence on innovation adoption. Because E-commerce adoption is an organizational-level decision executed in an inter-organizational context, relative advantage alone cannot explain the adoption of E-commerce. Therefore, there is a need for 'alignment' between the influence of relative advantage and the characteristics of relationship between parties.

2.9.1.2. Compatibility

Acquiring new technology may lead to significant changes on the work practices of a firm. Resistance to change is considered a normal organizational reaction (Cao et al., 2014; Rafferty, Jimmieson, & Armenakis, 2013). Greater fit and consistency between existing operating practices and the innovation, i.e., E-commerce, increase the degree of achieving successful E-commerce diffusion by way of reducing the modification and resistant effort (Rogers, 2003; Wu & Chuang, 2009).

Thus, innovation researchers use compatibility concept to reflect the degree of fit between different organization components and an innovation. Rogers offers one of the earliest definitions of Compatibility. He defines it as the degree to which using an innovation is perceived as consistent with the existing sociocultural values and beliefs, past and present experiences, and needs of potential adopters. Moore and Benbasat (1991) Use the same definition. Karahanna et al. (2006) and Kim, Kim, and Kil (2009)

define compatibility as the perceived cognitive distance between an innovation and precursor methods for accomplishing tasks. For the purpose of this study, Rogers (2003) definition is adopted.

The review of literature suggests various types of compatibility in which Tornatzky and Klein (1982) distinguish between two types of compatibility: practical and value Compatibility. Practical compatibility is the consistencies between an innovation and the prevailing practice in organization ecology while value compatibility is the consistency between an innovation and the values and norms of the potential adopters.

However, prior E-commerce adoption literature reports that a high level of innovation compatibility will encourage an organization to adopt the E-commerce innovation (Ahmad et al., 2014; Rajaguru & Matanda, 2013; Venkatesh & Bala, 2012). The underlying principle behind the role of compatibility is that high level compatibility will reduce the adjustments cost thus requiring the organization to make marginal changes only in their current status (McElheran, 2015; Wu & Chuang, 2009). For example, if a firm has previously invested in IT, hired employees with IT-related skills, and has up-to-date infrastructure that integrates easily with next-generation technology, it will carry out the process of selecting, adapting, and implementing new IT-based business processes at a lower cost (Fichman & Kemerer, 1997; McElheran, 2015).

Furthermore, high degree of compatibility proposes to decrease the perception of risk and increase the perception of benefit (Gao et al., 2012; Grover, 1993). Gao et al. (2012), examined the interaction effect among innovation characteristics. They found that compatibility has a significant positive effect not only on adoption decision but also on perceived relative advantage, perceived risk, and perceived complexity. to

understand how the relationship of the characteristics affect the relevance of other factors, a new conceptual framework that extends the innovation literature is required.

Moreover, a considerable literature examines the influence of compatibility on adoption behavior as shown in Table 2.9 Despite the popularity of "Compatibility "as IS adoption indicator (Jeyaraj et al., 2009; Tornatzky & Klein, 1982), consistent relationship between Compatibility and innovation adoption has not been established (Hameed et al., 2012). Table 2.9 shows some of these mixed results. The result indicates that compatibility produce mix results and only one study was conducted at the Middle East countries (Saudi Arabia)

Table 2. 9
Selected Studies Related to Compatibility Variable

Authors	Dependent Variable	Context	Result	
			Sig	Insig
(Wang et al., 2016)	Adoption of Mobile Reservation Systems	Taiwan	√+*	
(Hung et al., 2011)	E- Commerce Adoption	Taiwan	√+	
(Boumediene Ramdani et al., 2013)	Enterprise Applications Adoption	England	√+	
(Alshamaila et al., 2013)	Cloud Computing Adoption	England	√+	
(Venkatesh & Bala, 2012)	Adoption of Interorganizational Business Process Standards	USA	√+	
(Ruivo et al., 2012)	ERP Adoption	Portugal	√+	
(Oliveira et al., 2016)	Mobile Payment Adoption	Portugal	√+	
(Rajaguru & Matanda, 2013)	IOIS Integration	Australia	√+	
(Al-Qirim, 2007)	E-commerce Adoption	New Zealand	√+	
(Ghobakhloo et al., 2011)	E-commerce Adoption	Iran	√+	
(Abadi et al., 2013)	Mobile Banking Adoption	Iran	√+	
(Shah Alam et al., 2011)	E-commerce Adoption	Malaysia	√+	
(Ahmad et al., 2014)	E-commerce Adoption	Malaysia	√+	
(Kurnia, Karnali, et al., 2015)	E-commerce Adoption	Indonesian	√+	

Authors	Dependent Variable	Context	Result	
			Sig	Insig
(Gangwar et al., 2015)	IT Adoption	India	√+	
(El-Gohary, 2012)	E-Marketing Adoption	Egypt	√+	
(Ifinedo, 2011)	Internet/E-Business Technologies Adoption	Canada		√
(Picoto et al., 2014)	M-Business	Portugal		√
(Jahongir & Shin, 2014)	E-commerce Adoption	Uzbekistan		√
(Almoawi & Mahmood, 2012)	E-commerce Adoption	Saudi Arabia		√

*+ the direction of relationship is positive

These mixed results in prior studies show confusion in understanding the relevance of compatibility on adoption decision. Researchers attempt to find an explanation for these unexpected results. For example, scholars proclaim that the influence of compatibility play a different role in different adoption stages (Chan, Chong, & Zhou, 2012; Wu & Chuang, 2009). For example, Chan et al. (2012) argue that compatibility may have a greater influence in the initial adoption stage rather than in the implementation stage. They claim that potential adopters in the initiation and adoption stages made necessary adjustments to adopt an innovation. As a result, Compatibility issues are resolved in those stages and the need for Compatibility in the implementation stage will only be a minor concern. By contrast, Zhu et al. (2006) emphasis that technology Compatibility is a significant factor in all assimilation stages.

As most of executives in SMEs indicated a poor understanding of the compatibility of e-business and related technologies in business, because that owners will be more concerted efforts be made toward sensitizing SMEs' owners and their employees in the area about the pertinence of such innovations for enhanced business operations (Ifinedo, 2011).

In summary, Compatibility has a significant influence on adoption behavior. The inconsistent results about its influence, however, increase the need to examine some contingencies that may change the relevance of this factor.

2.9.1.3. Complexity

Perceived Complexity is an important factor in innovation evaluation. Complexity refers to the degree to which a new technology is comparatively difficult to apply and understand (Rogers, 2003). Perceived ease of use and perceived Complexity are used interchangeably in E-commerce adoption literature (Chan et al., 2012).

The main reason behind the influence of Complexity on adoption is that adoption decision depends on the length of time that the firms take to understand the intricacies of E-commerce technology mechanism, its application, and the advantages and benefits that can be reaped through its proper utilization in their businesses (Almoawi & Mahmood, 2012). In addition, complex innovation such as E-commerce requires not only technological adjustments, i.e., merging the web platform with the existing IT infrastructure, but also demands administrative adjustments like changes in internal operation. Furthermore, Complexity increases uncertainty about successful adoption and increases the risk perception (Ramdani et al., 2009). Therefore, the easier the technology and its implementation are understood, the faster the adoption process takes place and vice versa (Oliveira, Thomas, & Espadanal, 2014).

According to a comprehensive literature review of IT innovation adoption, there are significant negative relationship between degree of Complexity and diffusion of technologies have been reported (Penttinen & Tuunainen, 2009; Quadddus & Azam,

2009; Boumediene Ramdani et al., 2013; Shah Alam, 2009; Tarofder et al., 2013; Tsai et al., 2013). Despite of this, a wide variety of studies reports insignificant role (Hameed et al., 2012). Table 2.10 shows some of these mixed results and none of these studies tested in variable among Middle East countries.

Table 2. 10
Selected Studies Related to Complexity Variable.

Authors	Dependent Variable	Context	Result	
			Sig	Insig
(Alshamaila et al., 2013)	Cloud Computing Adoption	England	√+*	
(Boumediene Ramdani et al., 2013)	Enterprise Applications Adoption	England	√+	
(Ruivo et al., 2012)	ERP Adoption	Portugal	√+	
(Gangwar et al., 2015)	IT Adoption	India	√+	
(Wang et al., 2016)	Adoption of Mobile Reservation Systems	Taiwan		√
(Ifinedo, 2011)	Internet/E-Business Technologies Adoption	Canada		√
(Picoto et al., 2014)	M-Business	Portugal		√
(Ahmad et al., 2014)	E-commerce Adoption	Malaysia		√
(Almoawi & Mahmood, 2012)	E-commerce Adoption	Arabia Saudi		√
(Cao et al., 2013)	Intent to Adopt ESCM	North American	√+	
(Chan & Chong, 2012)	Decision to Adopt Rosettanet	Malaysian		√
(Thiesse, Staake, Schmitt, & Fleisch, 2011)	RFID Adoption	German		√

*+ the direction of relationship is positive

Researchers attempt to provide an explanation for these unexpected results. For example, Chan and Chong (2012) and Chan et al. (2012) argue that perceived complexity has less influence on the adoption decision given that internet technologies are easier to understand and implement compared to traditional Electronic Data Interchange (EDI) systems. On the other hand, researchers have investigated firms'

migration from traditional EDI to web-based IOS. They confirm that Complexity is an important element for this migration (Zhu et al., 2006).

In summary, the inconsistent findings of prior research suggest that the relationship between Complexity and adoption is more complicated than previously thought. It seems possible that other factors moderate the role of complexity. Very limited studies investigated in the contingent role of relationship characteristics on the relationship between Complexity and the adoption of E-commerce.

2.9.2. Organizational Factors

Organizational context refers to the organization's characteristics, attributes, and resources. These factors may hinder or facilitate the adoption of innovations (e.g. E-commerce adoption). This section discuss about the organizational variables tested for this study, namely organizational readiness, organizational innovativeness and absorptive capacity.

For the organizational variables, as compared to organizational innovativeness and absorptive capacity, organizational readiness is the most variable tested for the adoption of technology (E-commerce, e-business, mobile and cloud computing) (Lip-Sam & Hock-Eam, 2011; Shah Alam, Ali, & Mohd. Jani, 2011; Ifinedo, 2011; Boumediene Ramdani et al., 2013; Jahongir & Shin, 2014; Hajli et al., 2014; Rahayu & Day, 2015; Chee et al., 2016). None of these studies tested the relationship between organizational innovativeness and absorptive capacity (as the independent variable) to the adoption of technology. Therefore, these understudied variables become one of the contribution of the study to the literature of E-commerce adoption.

2.9.2.1. Organization Readiness

The term "organizational readiness" encompasses issues such as the quantity of IT employees and the ICT infrastructure in a company, as well as on a national level, internet penetration in society, technological readiness and e-banking infrastructure, among others. The success of IT adoption has often been predicted by the level of sophistication of both IT infrastructure and organizational readiness (Scupola, 2009; Thatcher et al., 2006).

Organizational resources and capability play a significant role in shaping the structure and determining the behavior of a firm. Organizational resources act either as a change enabler or change inhibitor (Unsworth, Sawang, Murray, Norman, & Sorbello, 2012). Adopting E-commerce requires a change in organization technology, people, process, and structure (Lin, Huang, & Burn, 2007; Rafferty et al., 2013). To adopt such technology in a proper manner, a traditional principle in the organization as well as IT literature highlights the importance of alignment between the nature of the technological change and the capabilities of firms (McElheran, 2015; Tarofder et al., 2013).

Organizational readiness for E-commerce comprises four elements: awareness, governance, commitment and resources (Molla & Licker, 2005a). In E-commerce adoption literature, organizational capability to adopt new technology is conceptualized as an Organizational Readiness. Fathian, Akhavan, and Hoorali (2008) identify it as "the ability of a firm to successfully adopt, use and benefit from information technologies". Jutla, Bodorik, and Wang (1999) commented that SMEs tend to not have sufficient knowledge of ICT and e-business. It is important for SMEs in developing

countries to re-structure their attitudes and knowledge about E-commerce (Hajli et al., 2014). However countries such as Iraq are still challenged with low internet penetration and organizational readiness to employ ICT in SMEs (Harash, Al-Tamimi, & Al-Timimi, 2014; White, 2012).

Newcomer and Caudle (1991) posit that access to adequate equipment in the organization is a major determinant of the adoption of new technologies. Similarly, Cohen and Levinthal (1989) pointed out that introduction and implementation of innovation depend on the firms' preexisting knowledge in areas relating to the intended innovation.

In order to understand the role of organizational Readiness, this study emphasis concept as the process by which organization readiness affects the adoption decision, namely ICT sophistication. Previous literature suggests that information system adoption requires technological resources to be implemented in proper way. ICT sophistication are usually used in most previous studies to reflect these resources (Rai, Brown, & Tang, 2009; Zhu & Kraemer, 2005). ICT sophistication refers to technology infrastructure and ICT human resources (Chwelos et al., 2001; Iacovou et al., 1995). Technology infrastructure offers a platform in which E-commerce technology can be constructed while ICT human resources offer the required knowledge and skills to develop and manage E-commerce applications (Zhu & Kraemer, 2005). This suggests that E-commerce application cannot be an integral part of firm operation without ICT infrastructures and ICT technical skills (Lin et al., 2007; To & Ngai, 2006).

However, several empirical studies confirm the significant relationship between organization readiness and adoption of E-commerce, but at the same time insignificant relationship also reported. Table 2.11 shows selected studies.

Table 2. 11
Selected Studies Related to Organizational Readiness Variable.

Authors	DV	Context	Result	
			Sig	Insig
(Chee et al., 2016)	E-commerce Adoption	Malaysia	√+*	
(Lip-Sam & Hock-Eam, 2011)	E-commerce Adoption	Malaysia	√+	
(Boumediene Ramdani et al., 2013)	Adoption of Enterprise Applications	England	√+	
(Ifinedo, 2011)	Internet/E-Business Technologies Adoption	Canada		√
(Hajli et al., 2014)	E-commerce Adoption	Iran		√
(Hameed et al., 2012)	IT Innovation Adoption	Meta- analysis		√
(Shah Alam et al., 2011)	E-commerce Adoption	Malaysia		√
(Osakwe et al., 2015)	Websites Adoption	Nigeria		√
(Jahongir & Shin, 2014)	E-commerce Adoption	Uzbekistan		√
(Gangwar et al., 2015)	IT Adoption	India		√

*+ the direction of relationship is positive

Researchers attempt to provide an explanation for these unexpected results. For example, Hameed et al. (2012) prove that stage of adoption significantly moderate the influence of resource availability on adoption. Furthermore, they report that in case of small organizations, resource availability plays a weak role on ICT adoption. For large organizations, however, resource availability has no role on ICT adoption. In addition, McElheran (2015) found that internal capability poorly explain the disparity of likelihood to adopt E-commerce technology among leading firms. The need for a partner to invest in the innovative process appears to be the biggest hurdle to the engagement of leaders in this type of business process innovation.

Kuckertz and Breugst (2009) also noted that some nations that have great prospect for E-commerce as indicated by a high level of Organizational Readiness have exhibited only low levels of E-commerce adoption. On the other hand, other nations having low levels of Organizational Readiness seem to have better capitalized on their potentials by showing relatively high levels of E-commerce adoption. They suggest culture as a moderating variable between organization readiness and adoption of E-commerce (Kuckertz & Breugst, 2009).

In summary, it is not easy to draw conclusion about the role of Organizational Readiness on adoption decision due to contradictory results in prior research. This issue requires further investigation. As mentioned in the above discussion, most of the studies focus on the organization's internal evaluation and assessment without considering co-adoption attribute of E-commerce technology.

2.9.2.2. Organizational Innovativeness

Innovativeness has become a pre-requisite for a firm's competitive advantage and survival. It seems particularly vital to small firms with limited resources (Van de Vrande, De Jong, Vanhaverbeke, & De Rochemont, 2009). Some studies (Damanpour, 1991; Hult, Hurley, & Knight, 2004), refer to innovativeness as 'the capacity to introduce of some new process, product, or idea in the organization'. Hurley and Hult (1998, p. 47) conceptualize organizational innovativeness as 'an aspect of organizational culture'. Lumpkin and Dess (1996, p. 141) follow a combined conceptual approach, according to which innovativeness reflects 'a firm's tendency to engage in and support new ideas, novelty, experimentation, and creative processes which may result in new products, services, or technological processes'.

Organizational innovativeness has been regarded as an important capability to secure a firm's sustainable competitive edge in an ever-changing environment. Innovation is especially highlighted in emerging Asian economies, such as China, India, Korea, etc. Their rapid-growth has stemmed from low labor costs, and thus they are striving to upgrade their industry structures through leveraging their innovation capability (Yu et al., 2013). Organizational innovativeness, which refers to a firm's capability to initiate and implement innovations with a speed, is pivotal to its survival and growth (Hurley & Hult, 1998). The organizational innovativeness is the willingness of the organization to encourage and support the innovation among the employees by providing the development of new knowledge and insights (Hussein, Omar, Noordin, & Ishak, 2016). Organizational innovativeness as an organizational capacity to engage in creative processes, experiment, apply new approaches and techniques (i.e. E-commerce), generate new knowledge and products (Lumpkin & Dess, 1996).

Organizational innovativeness is defined as "an organization's overall innovative capability of introducing new products to the market, or opening up new markets, through combining strategic orientation with innovative behavior and process" (Uslu, Bülbül, & Çubuk, 2015). Therefore, organizational innovativeness can reflect something that is new to the industry and/or the customer, and is an important dynamic capability itself (Gebauer, 2011). These capabilities become evident when firms learn to do something well, such as manufacturing new products or developing effective policy (Spring & Araujo, 2013).

If a firm has a culture of innovativeness, it is more likely to consider adopting technological innovations, such as E-commerce, to improve coordination with its

trading partners and increase the agility in its value chain activities. Further, an innovative firm will be more responsive to the needs of its trading partners and thus is more likely to adopt innovations that can help improve the relationship with its partners. Innovative firm will be in a better position to adopt E-commerce for two key reasons. First, an innovative firm is less likely to be vulnerable to organizational inertia (i.e., resource and routine rigidities), a major barrier to innovation implementation, because of its experience and prior success with innovation implementation. Decision makers in such a firm are more likely to be willing to invest in innovations and change routines or work processes that can potentially lead to greater market success. Employees in such a firm are more likely to be favorable to changes in their routines or work processes because of new innovation implementation. Second, innovativeness has been found to influence organizational growth and profitability (Cho & Pucik, 2005; Venkatesh & Bala, 2012).

Previous studies depict organizational innovation as a capability that positively influences other capabilities (e.g., collaboration, technology, and learning) as well as performance (Berghman, Matthyssens, & Vandenbempt, 2012; Ellis, Henke, & Kull, 2012), where organizational innovativeness has a positive impact on the implementation and adoption of technology (Gabler, Richey, & Rapp, 2015b). In a study of 333 SMEs in South Korea innovativeness is found to give an impact on the performance of these companies (Rhee, Park, & Lee, 2010). Past literarature found that innovativess did not provide a moderator effect between family management involvement and performance (Kellermanns, Eddleston, Sarathy, & Murphy, 2012). Another review study by Uhlaner, Kellermanns, Eddleston, and Hoy (2012) also concluded that not all family business accept innovativeness as a factor to promote the

business growth. Moreover, the above review also found that many of family business are resist to accept changes.

Keskin (2006) indicates that the majority of empirical studies concerning innovativeness focus on significant companies in developed countries, while ignoring, to some extent, small firms in developing countries. Consequently, little significant international research activity on innovativeness within the SMEs, has emerged from the extant literature (Lynch et al., 2010).

Innovativeness (being open to new products): is linked to the human characteristics of the decision maker (cognitive style), given that in small businesses the CEO is often the owner-manager (Marcati, Guido, & Peluso, 2008). Generally speaking, innovativeness relates to the openness to follow new ways, and the methods by which clients process information, take decisions and solve problems (Kirton, 2004; Marcati et al., 2008). On the firm level, the receptiveness of an organization towards new ideas plays a key role in the adoption of innovations in SMEs (Marcati et al., 2008). This factor has been investigated in previous studies such as Midgley and Dowling (1978), Hirschman (1980) and (Rogers, 2003). It is evident from reviewing previous studies that a history of innovativeness promotes the likelihood for further positive adoption decisions for new technological innovations within firm (Damanpour, 1991; Marcati et al., 2008).

In summary, organizational innovativeness has a significant influence on adoption behavior. Future studies are urges to further investigate these variables in the developing countries in general and the Middle East and Iraq, including in particular. Since there are very few studies on this important sector however, increase the need to

examine some contingencies that may change the relevance of this factor. Very few studies have examined the moderating effect of civil conflict and the relationship between Organizational innovativeness and the adoption of technology.

2.9.2.3. Absorptive Capacity

External knowledge transfer has been receiving increasing interest among researchers for the past five decades (Sparrow, Tarkowski, Lancaster, & Mooney, 2009). Following the seminal contributors (Cohen & Levinthal, 1989), the concept of absorptive capacity has emerged and has been used successfully in several studies investigating knowledge transfer among organizations (Andersén & Kask, 2012; Flatten, Greve, & Brettel, 2011).

In theory, external knowledge transfer stems from the fields of dynamic capability, organizational learning and knowledge management (Easterby-Smith, Graça, Antonacopoulou, & Ferdinand, 2008; Messinis & Ahmed, 2013). While the concept calls for the realization and acquisition of knowledge from the environment, specifically from acquisitions and other inter-organizational relations, it also highlights the internal processes of learning from prior experience and present actions (Easterby-Smith et al., 2008; Gebauer, 2011).

An organization that is systematically able to identify, capture, interpret, share, reframe, and recodify new knowledge; to link it with its own existing knowledge base; and to put it to appropriate use will be better able to assimilate innovations, especially those that include technologies such as E-commerce (Ferlie, Gabbay, Fitzgerald, Locock, & Dopson, 2001; Greenhalgh, Robert, Macfarlane, Bate, & Kyriakidou, 2004).

Prerequisites for absorptive capacity include the organizations existing knowledge and skills base and preexisting related technologies, a "learning organization" culture, and proactive leadership directed toward sharing knowledge (Ferlie et al., 2001; Zahra & George, 2002).

The knowledge that underpins the adoption, dissemination, and implementation of a complex innovation within an organization is not objective or given. Rather, it is socially constructed and frequently contested and must be continually negotiated among members of the organization or system. Strong, diverse, and organic (i.e., flexible, adaptable, and locally grown) intraorganizational networks (especially opportunities for interprofessional teamwork) help this process and facilitate the development of shared meanings and values in relation to the innovation (Ferlie et al., 2001; Greenhalgh et al., 2004; Lau & Lo, 2015).

Many researchers have used the concept of absorptive capacity in their analyses at different levels: individual and organization (Lane & Lubatkin, 1998; Murovec & Prodan, 2009; Zahra & George, 2002) and country (Hou & Gee, 1993; Kina, 1993). However, most studies on absorptive capacity focus on very large organizations with sophisticated structures and a strong R&D orientation. Very few studies address the theory of absorptive capacity in the context of small and medium size organizations. Absorptive capacity generally facilitates the adoption of innovation. Furthermore, management should focus on embedding and fully utilizing employees' existing knowledge or expertise into daily activities to encourage them to share their lessons learned regarding environmental-related matters. Demonstrating and sharing that particular knowledge could benefit others by assisting them to implement new ideas or

innovation activities (Hashim, Bock, & Cooper, 2015). In turn, absorptive capacity mediates the relationship between IT use and financial performance (Iyengar, Sweeney, & Montealegre, 2015).

Gray (2006) explored the SMEs ability to absorb and manage knowledge as an important factor towards successful adoption of innovation and entrepreneurial growth. However, the studies were confined to the effects of experiential and formal knowledge on the development of SME absorptive capacity and how it links to innovation and performance. The studies did not cover other issues and factors influencing the ability of SMEs to absorb and apply new knowledge and technology. Gray (2006), Barrett, Sexton, and Lee (2008) suggest that performance improvement, based on new knowledge absorbed into SMEs, can and do occur successfully, but in a different way to large enterprises. There are significant differences between large companies and SMEs in their ability to absorb new knowledge because of their unique characteristics.

Furthermore, Sexton and Barrett (2003) identified the motivations of small organizations and how these influenced their characteristics. They found that the main motivation of SMEs is to survive, followed by stability and growth. Due to the niche market in which they operate and their limited resources. According to Sexton and Barrett (2003), once organizations have confidently achieved the survival stage, only then are they motivated to look forward consolidating and stabilizing their position over the medium term. The stability stage will further provide motivation for development and growth, and in a study a sample of 158 SMEs from South Korea's semiconductor industry, they find that a firm's absorptive capacity leads to better performance in terms of new product development, market performance and profitability (Tzokas, Kim,

Akbar, & Al-Dajani, 2015). Absorptive capacity of shipping companies moderates the positive impact of shipping knowledge on the logistics value; it directly affects the improvement of organizational innovation(Lee & Song, 2015).

Though SMEs are facing with lots of challenges in globalized environment, they have great potential to promote domestic-led growth in the existing industries. Through how firm use its ability to learn and adopting of new technology (for example, E-commerce) and use learning and technology more efficiently than others (Denan et al., 2012). Absorptive capacity is an important factor in determining successful operational performance of SMEs (Denan et al., 2012). This finding is consistent with the previous studies (Liao, Welsch, & Stoica, 2003; Thérin, 2007; Todorova & Durisin, 2007), indicating that SMEs absorptive capacity can influence firms' flexibility and response to the market change (Denan et al., 2012). Also SMEs with a well-developed absorptive capacity can additionally use it as an instrument to improve the effectiveness of strategic alliances, and thus enhance firm performance (Flatten et al., 2011). But there is not much information on the effects of Absorptive capacity with regard to small and medium-size enterprises or newly established firms (Gray, 2006; Muscio, 2007). Even though governments makes much effort to help the SMEs, it is still a long way to enable them to upgrade their level of knowledge and capitalize on technology transfer (Noor, Nasirun, Hashim, & Hamid, 2015).

Consistent with Jones (2006) and Easterby-Smith et al. (2008)it is suggested that further studies of organizational applications of Absorptive capacity should be developed using longitudinal and qualitative data, especially in SMEs, where rapid responses to market changes are essential to ensure sustained competitiveness (McAdam, Miller,

McMacken, & Davies, 2010; Muscio, 2007). It is necessary to SMEs remain competitive by having the dynamic capability to respond to such challenges (Cheng, Li, Love, & Irani, 2004; Matthews, Pellew, Phua, & Rowlinson, 2000). Absorptive capacity has been defined as a dynamic capability that enables a firm effectively to acquire and utilize external and internal knowledge, which affects the firm's ability to innovate and adapt to its changing environment and hence to increase its competitiveness (Lane, Koka, & Pathak, 2006; Zahra & George, 2002). They must have the dynamic capability to learn quickly, integrate new knowledge and technology and transform and implement this new knowledge in their business routines and processes to increase effectiveness and competitiveness (Daghfous, 2004; Jones, 2006). Therefore, to support SMEs in becoming successful, there is a need to analyze the absorptive capacity of the SMEs (Hutabarat & Pandin, 2014). As such, SMEs should utilize both formal and informal external knowledge sources effectively to acquire new knowledge that is helpful when operating within turbulent environments (Guo & Wang, 2014).

The absorptive capacity theoretical lens has been successfully applied to relate e-business and knowledge identification and assimilation knowledge transformation and exploitation capabilities to the competitive performance of SMEs, The absorptive capacity lens can be used to plan the development of IT capabilities for SMEs that aim to internationalize or are in the process of doing so, founded upon a two-level analytical approach. Potential absorptive capacity, based on knowledge acquisition and assimilation capabilities, illustrates the basic organizational capabilities that an international SME should first consider developing and deploying, the importance, and e-business intelligence, E-commerce, and e-collaboration capabilities. These

capabilities constitute in turn the canvas onto which realized absorptive capacity, based on knowledge transformation and exploitation capabilities, identifies the befitting organizational capabilities that should then be developed and deployed (Raymond, Bergeron, Croteau, & Pierre, 2015; Xia & Roper, 2016). This was made in light of Roberts, Galluch, Dinger, and Grover (2012) plea for more research on the relationship between information systems and absorptive capacity.

Therefore, on the basis of the above discussions and Zahra and George's study, the present study defines absorptive capacity as a set of capabilities and qualifications of the firm by which it acquires, assimilates, transforms and exploits external knowledge from various partners and integrates it with previous knowledge to generate a dynamic capacity for innovation.

Knowledge transfer can provide an SME with a competitive advantage, if the new knowledge is applied to commercial ends. Jensen, Johnson, Lorenz, and Lundvall (2007) argue that knowledge and innovation are intertwined as innovation is based on the application of new knowledge, and at the same time the application of new knowledge leads to change and innovation. Galanakis (2006) notes that, in order to survive, an organization has to innovate constantly, and thus innovation provides competitive advantage for an SME (Fogg, 2012).

To summarize, it can be concluded that for SMEs, increasing absorptive capacity through recognizing the value of new external knowledge, assimilating it and applying it to commercial ends can lead to innovation and ultimately to a competitive advantage. In this context, absorptive capacity reflects the capability of the firm to search for required external knowledge and then integrate it with prior knowledge to satisfy

market requirements; such capability calls for meeting the following specifications: (1) capable of diagnosing urgent external knowledge. (2) capable of taking advantage of this knowledge and combining it with prior knowledge; and (3) capable of activating this knowledge and directing it towards future innovation. In other words, absorptive capacity is the capability of organizations to skim the external knowledge and the effectiveness of its communication processes.

2.9.3. Environment Factors

The external environment of the SME organization also impacts some challenges to ecommerce adoption. It describes the realm of business engagement of the firm (Scupola, 2009; Venkatesh & Bala, 2012).

Furthermore, for the environmental variables, most of studies on E-commerce adoption tested role of government or government support as the independent variable (Chatzoglou & Chatzoudes, 2016; Chee et al., 2016; Awiagah et al., 2015; Jahongir & Shin, 2014; Saedi & Iahad, 2013; Ifinedo, 2011) as compared to perceived trust or relational trust (Sila & Dobni, 2012). However, literature confirms that, relational trust still important factor influencing the decision to adopt the technology. The following section discuss about these two factors.

2.9.3.1. The Role of Government

Previous research found that the role of government is an important consideration that may affect the adoption of innovations, especially in developing countries (Awa, Awara, et al., 2015; Chee et al., 2016). Mia (2006) notes that the adoption of E-

commerce in Singapore was a good example of governmental support driving technology innovation, in which Singapore was among the best performers of E-commerce around the world. Moreover, government policy positively affected the E-commerce adoption in Saudi Arabia (Makki & Chang, 2015). Similarly, the existence of supportive policies were related significantly to E-commerce decisions in China (Cui, Zhang, Zhang, & Huang, 2006) and the extent of E-commerce adoption in Brunei (Seyal & Rahman, 2003). Mann (2002) further posited that the slowness or failure of E-commerce adoption in some developing countries was the result of policy inaction or wrong action by their governments.

Lack of governmental support was a significant barrier to online banking adoption in Oman (Khalfan & Alshawaf, 2004). Moreover, the absence of regulations and legislations was a major barrier and/or serious limitation to e commerce diffusion in Turkey (Kaynak, Tatoglu, & Kula, 2005). A study conducted by Shih, Dedrick, and Kraemer (2005) shows that fewer firms in China adopted ecommerce due to the less friendly legal environment, and the authors conclude that ecommerce adoption will be slow in the countries without adequate legal frameworks regulating rights and obligations in the intangible cyberspace (Li & Xie, 2012).

Government regulation can have either a beneficial or a detrimental effect on innovation. When governments impose new constraints on industry, such as requiring pollution-control devices for energy firms, innovation is essentially mandated for those firms. Similarly, stringent safety and testing requirements can retard innovation in numerous industries. For instance, in construction, where new materials must be extensively tested before they can be used, or in agriculture, where new varieties of

crops must be patented and licensed, the cost of innovation can be quite high. Another example exists in banking, where privacy requirements may prevent banks from introducing new ways for customers to access their account information. Thus, government regulation can either encourage or discourage innovation (Baker, 2012).

The role of government in providing various forms of intervention has been cited as a catalyst for the development of E-commerce in SMEs (Awiagah et al., 2015;). Government support can come in the form of facilitating policy for SME operations in the country, institutional support for providing financial and technological assistance, improving E-commerce infrastructure, and enacting favorable E-commerce laws (Scupola, 2003). Researchers (Chee et al., 2016;) noted that developed countries' ability to adopt and use E-commerce and e-business at advanced levels has been greatly enhanced by their government's proactive role in providing the enabling infrastructure for E-commerce to thrive. This is often lacking in developing countries because their governments are usually concerned with issues of poverty and hunger eradication (Alrawi & Sabry, 2009).

As shown above, research results on the effect the role of Government on adoption of E-commerce are mixed between developing and developed countries. Table 2.12 shows that the earlier studies produced contrasting results regarding influence of the role of Government variable.

Table 2. 12
Selected Studies Related to the Role of Government Variable

Authors	Dependent Variables	Context	Result	
			Sig	Insig
(Awa, Awara, et al., 2015)	E-commerce adoption	Nigeria	√+*	
(Awiagah et al., 2015)	E-commerce adoption	Ghana	√+	
(Osakwe et al., 2015)	E-commerce adoption	Nigeria	√+	
(Chee et al., 2016)	E-commerce adoption	Malaysia	√+	
(Makki & Chang, 2015)	websites adoption	Saudi Arabia	√+	
(Ifinedo, 2011)	e-business technologies adoption	Canada		√
(Chatzoglou & Chatzoudes, 2016)	e-business adoption	Greece		√
(Scupola, 2009)	E-commerce adoption	Australia		√

*+ the direction of relationship is positive

Greece government support does not seem to have similar significance. These contradictive results may be attributed to the different context of each study. Therefore, it can be concluded that the level of economic development of each country is responsible for the different significance of government support. Certainly, Greece, a developed country (member of the E.U. and the Euro zone) has different characteristics from Nigeria (Chatzoglou & Chatzoudes, 2016; Osakwe et al., 2015)

In sum, due to contradictory results in prior research, it is not easy to draw conclusion about the role of Government in support E-commerce adoption among SMEs. Clearly, there is a difference in the support and often depends on the level of development in the country with regard to laws and policies. Hence, Iraq's own case since the 2003, civil conflict is tested in a different environment from the rest of the countries, a conflict civil environment and extent of government support for SMEs in these areas.

2.9.3.2. Relational Trust

E-commerce is not only an online transaction but it also involves information sharing and maintaining business relationships (Lai, Tong, & Lai, 2011; Li, Pieńkowski, Van Moorsel, & Smith, 2012). In order to achieve successful and sustainable supply chain relationship, trust is a key (Al-hakim, 2012; Kim, Ferrin, & Rao, 2008; Obal, 2013). According to Social Exchange theory, inter-organizational trust is more able to explain the inter-organizations interaction than economical calculation (Wu, Chuang, & Hsu, 2014). Trust, as a feature of inter-organizational relationship, has been defined in many ways. Anderson and Narus (1990) define trust as "a firm's belief that another company will perform actions that will result in positive outcomes for the firm, as well as not take unexpected actions that would result in negative outcomes for the firm". Morgan and Hunt (1994) use trust to refer to the willingness of one firm to rely on the partner on whom one has confidence and it exists when one party has strong faith in the partner's reliability and integrity.

In addition, trust has been operationalized as a multidimensional structure of trusting belief. It is considered as a high order construct that consists of conceptually distinct dimensions but closely interrelated (Li et al., 2012). Literature suggests various dimensions for measuring trust but the three main dimensions of trusting beliefs are integrity, benevolence, and competence (Li et al., 2012; McKnight, 2001; Son & Benbasat, 2006). Table 2.13 defines those dimensions based on Ba and Pavlou (2002) and Mayer, Davis, and Schoorman (1995).

Table 2. 13
Trust Dimensions

Trust Dimension	Description
Integrity	Refers to the belief that a trusted party will honor its commitments to another party
Benevolence	Refers to the belief of the trusting party that the trusted party will not take advantage of it
Competence	Refers to the belief that a trusted party will behave competently

Many studies emphasis that inter-organizational collaboration and inter-firm interaction rely heavily on a relationship characterized by a high level of trust (Kumar & Van Dissel, 1996; Sridharan & Simatupang, 2013). The main rationale behind the role of trust in inter-organizational relationship is that trust breeds a sense of psychological reassurance that the expected results in the relationship will be obtained. Therefore, low level of trust diminishes the assurance between parties and introduces uncertainty making the cooperative effort costly and difficult to achieve (Li et al., 2012).

Additionally, a high level of trust would encourage the participators to have an open communication channel and increase information sharing. It also increases the participators' willingness to take risks with his partner by mitigating the uncertainties in inter-organizational relationships such as opportunistic behaviors, imbalance of power, and conflicts (Chong, Chan, Goh, & Tiwari, 2013; Shih, 2012; Shih, Lin, & Ke, 2013; Wu et al., 2014).

Moreover, trust increases the focal firm's perception about system usefulness, value, and 'ease of use' (Gefen et al., 2003; Obal, 2013; Ratnasingam, Pavlou, & Tan, 2002). It has been also proven that trust leads to positive outcomes such as performance

advantage, competitive, satisfaction, and perceived risk reduction (Ba & Pavlou, 2002; Obal, 2013; Perrone, Zaheer, & McEvily, 2003).

Beth et al. (2003) and Chae, Yen, and Sheu (2005) stressed that building relationships between business partners is more important than investing in advanced technologies alone in supply chain management. Researchers confirm that E-commerce may not succeed without the existence of trust (Ali et al., 2010; Chang & Wong, 2010). Ali et al. (2010) investigated the influence of trust in Bahrain grocery industry. They examined six case studies and found that the lack of trust in the industry makes many firms believe that there is no need for IOS adoption.

Despite the importance of trust in inter-organizational relationship, some studies report insignificant relationship between adoption and trust. For example, Al-hakim (2012) find that the level of trust does not influence positively the e-procurement adoption decisions. Chong and Bai (2014) and Saunders and Clark (1992) also arrived at a similar result. These results could be justified by Ali's (2010) work. He argues that the influence of trust on adoption decision is related to the level of IOS sophistication. Based on eight cases in Australia, he found that trust does not influence transactional IOS. However, when the level of IOS sophistication increases, trust plays a more important role.

In sum, presence of trust may not facilitate, but its absence would seriously inhibit ecommerce efforts. There were very few studies on the role of trust in the technology adoption in general and E-commerce in particular, either at the level of small and medium-sized companies is almost non-existent for this will be the inclusion of this variable in this study.

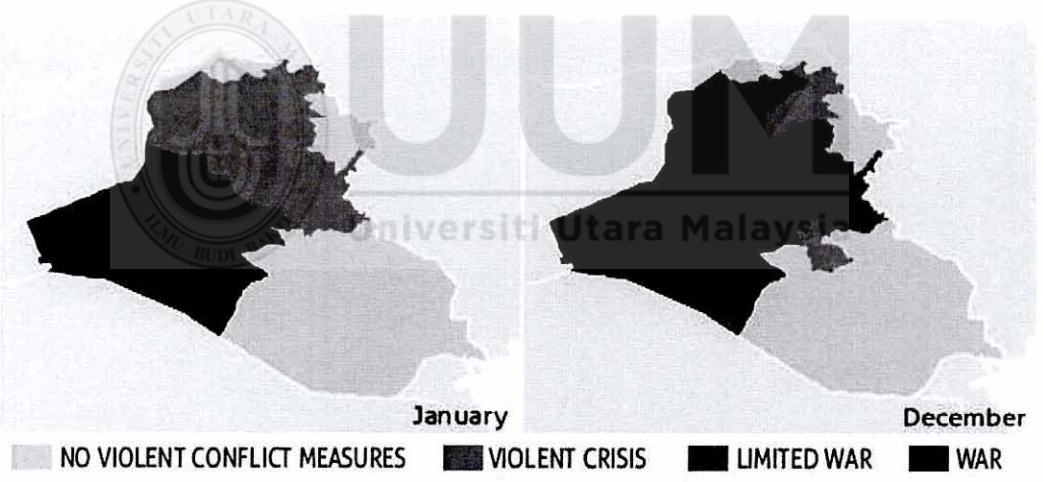
2.9.4. Civil Conflict

A conflict as the clash of interests or positional differences over national issues between at least two parties, happening within a particular period of time, duration and with varying magnitude. In most circumstances, the two warring parties are determined to pursue their interests and doggedly achieve their goals (HIICR, 2014). Previous researcher found that conflicts is the reflection of diverse levels of disputes in the society. Conflicts could be classified into two major forms namely, national and international conflicts. Generally it can be categorized based perceived intensities, starting with latent conflicts, then crises, severe crises and wars. This categories can be further classifies as dispute, non-violent crisis, violent crisis, limited war, and war. This new distinction enabled us to see conflict as a process (HIICR, 2014). At this point, it can be seen that present society demonstrates different forms of conflicts and violent around the globe (Khan, 2010; Khan et al., 2012).

In 2015, a total of 71 conflicts was observed in the Middle East and Maghreb, which marks a decrease by two case compared to 2014. With ten highly violent conflicts, the region accounted for almost a quarter of all highly violent conflicts worldwide, while the region's six wars make up nearly a third of all wars. The conflict with the major impact on the conflict landscape in the Middle East and Maghreb was the conflict with the so-called Islamic State (Syria and Islamic State, Iraq and Islamic State). Within its core in Syria and Iraq Islamic State made significant territorial gains in the first half of the year capturing Ramadi, al-Anbar Governorate, Iraq and the ancient city Palmyra, Homs Governorate, Syria. But throughout the second half of the year losing territory to Kurdish groups in northern Syria and northern Iraq, as well as against the Iraqi army,

supported by Shia militias, in central Iraq and al-Anbar. A US-led coalition targeted Islamic State with airstrikes in both countries (HIICR, 2015).

Figure 2.5 below shows a comparison of control area by Islamic State between January 2014 and December 2014. Islamic State began control of the western Iraq specifically state Anbar province at the beginning of the year, and by the year end, the Islamic State was able to impose a full control of the Sunni areas that make up more than 60% of the area of Iraq. At the same time, the dispute between the Kurdistan Regional Government and the central government of Iraq also continued, due to tensions over the control of the oil trade with Turkey and the status of Kirkuk (HIICR, 2015).



Source: (HIICR, 2015)

Figure 2. 5
Islamic state-controlled areas in Iraq in 2014

In a developing nations and war nations such as Iraq with limited communications infrastructure, there is a powerful need and desire for access to information by the

companies, in spite of the risks, such as civil conflict associated with use. The perceived benefits of use of electronic services for access to people and information are likely strong drivers that motivates users to use the technology. Yet, very little is known about the impact of external, violent threats with regard to information access on electronic services, even though it is widely acknowledged that the risks, such as civil conflict hinders the activities related with economies (Lee & Rao, 2007; Robison & Crenshaw, 2010).

Furthermore, the level of civil conflicts varies from one are to another area in Iraq such as the civil conflict in Erbil, Sulaymaniyah and Dohuk in 2015 shows an inconsistency from January to December. In the city of Erbil, there were violent crises throughout the year, with some limited war that occurred in June. However, the boarders of Erbil was on war over the year. On the contrary, in Sulaymaniyah and Dohuk, the cities were in no conflict, but there were war and violent crises at the borders of both cities. This data indicates that this variable should be observed and not able to be manipulated. See Table 2.14 (HIICR, 2015).

Table 2. 14
Levels of civil conflict in Erbil, Sulaymaniyah and Dohuk in 2015

The Month	Erbil		Sulaymaniyah		Dohuk	
	In City	On Borders	In City	On Borders	In City	On Borders
January	Violent Crisis	Violent Crisis	No Violent Conflict Measures	Violent Crisis	No Violent Conflict Measures	Violent Crisis
February	Violent Crisis	War	No Violent Conflict Measures	War	No Violent Conflict Measures	Violent Crisis
March	Violent Crisis	War	No Violent Conflict Measures	War	No Violent Conflict Measures	Violent Crisis

Continue

Table 2. 14 (Continued)
Levels of civil conflict in Erbil, Sulaymaniyah and Dohuk in 2015

The Month	Erbil		Sulaymaniyah		Dohuk	
	In City	On Borders	In City	On Borders	In City	On Borders
April	Violent Crisis	Violent Crisis	No Violent Conflict Measures	Violent Crisis	No Violent Conflict Measures	Violent Crisis
May	Violent Crisis	Violent Crisis	No Violent Conflict Measures	Violent Crisis	No Violent Conflict Measures	Violent Crisis
June	Violent Crisis &Limited War	War	No Violent Conflict Measures	War	No Violent Conflict Measures	War
July	Limited War	War	No Violent Conflict Measures	War	No Violent Conflict Measures	War
August	War	War	No Violent Conflict Measures	War	No Violent Conflict Measures	War
September	War	War	No Violent Conflict Measures	Limited War	No Violent Conflict Measures	War
October	Violent Crisis	War	No Violent Conflict Measures	War	No Violent Conflict Measures	War
November	Limited War	War	No Violent Conflict Measures	War	No Violent Conflict Measures	War
December	Limited War	War	No Violent Conflict Measures	War	No Violent Conflict Measures	War

The study of Khan et al. (2012) is probably one of the pioneer study to combine digital divide, technology adoption and civil conflict issues in the context of electronic services

in Afghanistan. The study contributed to the exploration the effects of the civil conflict on the electronic services provided through Internet (Khan et al., 2012). This study showed a diverse direction of research for this area. Where previously, most of the research related to conflict focused more on the internal conflict in the organization such as internal organizational conflict and interpersonal conflict (Barki & Hartwick, 2001; Trimmer, Collins, Will, & Blanton, 2000) that effecting the organization.

Studies related with civil conflicts countries and electronic services including electronic commerce, through internet shows a mix results. Previous electronic services studies conflicts faced was one of the major challenges faced by electronic service providers, which greatly affected its usage in developing countries (Basu, 2004). Situations of civil conflict and political instability reduced the intention to use electronic services (Khan et al., 2012). Some findings revealed that levels of civil conflict in a country reflected technology adoption behavior in a particular country, where countries that engaged in civil conflicts are less likely to adopt new technology because their resources and efforts are devoted to winning the war instead of adopting new civilian technologies (Partridge, 2007). A review by Robison and Crenshaw (2010) of internet diffusion across 143 nations, also concluded that civil conflicts would negatively impact internet use and slowing down the economic growth. Hence, conflict was seen as a negative predictor to the technology adoption through sabotage of telecommunication infrastructure, raising doubt among society to adopt this technology.

However, researchers like (Sanginga, Kamugisha, & Martin, 2007) found a positive association between civil conflicts and technology adoption in the natural resource management. Civil conflict faced by a particular country can be seen as a state of

emergency. As such, a study that conducted on the level of use of electronic services due to effect of a state of emergency in the United States to a after the events of 11 September 2001, and during the war on Iraq in 2003 (Lee et al., 2003). In cases of war and emergencies seen the electronic services provided through the Internet to a high level of risk, for example, in the case of public emergency, may disrupt power supply or communication network and thus all electronic services, including E-commerce via the Internet became unstable and therefore, gave a negative effect on the intention of the use of electronic services among society (Lee et al., 2003). However, at this particular time society used internet as a source of information and communication, especially when other electronic infrastructure affected (Lee et al., 2003; Rainie, 2001)

Other that giving a direct effects (positive or negative) to the adoption of electronic services, including electronic services previous researchers also revealed that the civil conflict played partially moderating roles between some of the independent variables e-services access that affect the adoption and e-services adoption use intention (Khan et al., 2012). However, this finding need to be tested further to ensure the consistency of the results particularly in the setting related to the civil conflict.

Finally, as suggested by previous researchers, where if the government intent to seriously offering electronic services among society, the related infrastructures such as internet access and computers must be provided to increase the access to these services (Khan et al., 2012). Therefore, for countries that facing civil conflict and violence, the government should initiate special policies for giving society a feeling of security or reducing the effects of conflict while providing infrastructure for online services (Khan et al., 2012).

2.10. Summary of Chapter

This section provides the review of past literatures about the context of the study, underpinning theories and variables to be used in this study. Next chapter will discuss about the development of hypothesizes and research methodology used to answer the research objectives.

CHAPTER THREE
THE THORETICAL FRAMEWORK AND RESEARCH METHODOLOGY

3.1. Overview of the Chapter

The research framework, research methodology, and data collection are discussed in this chapter. The chapter is divided into six sections. Sections 3.2 and 3.3 cover the research framework that explains the relationship between the research variables and firms' intent to adopt E-commerce. Research design and procedures that were implemented to examine the relationships between the research variables are specified in section 3.4, while section 3.5 presents the data collection procedures. Data analysis techniques, data coding, descriptive statistics , data screening, missing data and data entry error treatment ,outliers identifications, and data analysis using Structural Equation Modeling Partial Least Square (SEM-PLS) bias are presented in sections 3.6 and 3.7. Finally, summary of chapter's is presented in the section 3.8.

3.2. Research Framework

The TOE model permits a researcher to explain the organization intention to adopt E-commerce. It categorizes the adoption determinants into three contexts: technology, organization, and environment. Since this model allows researchers to specify a wide range of factors under each context, this study considers the relative advantage, complexity, and compatibility to be the technological-related determinants. Under organizational context, the organizational readiness, organizational innovativeness and

absorptive capacity were considered as organizational context. In the environmental context, the role of government and relational trust were considered.

In this study and perhaps for the first time, the moderating effect of civil conflict on the TOE model is included. According to Heidelberg Institute for International Conflict Research, Iraq has been classified among the countries that suffer from a high-level civil conflict between the components of the people, Sunni and Shiite, Arabs and Kurds, and Kurds and Turkmen (HIICR, 2014, 2015). Figure 3.1 depicts the proposed framework. The rest of this section describes the relationship between research variables. This, in turn, leads to research hypotheses.

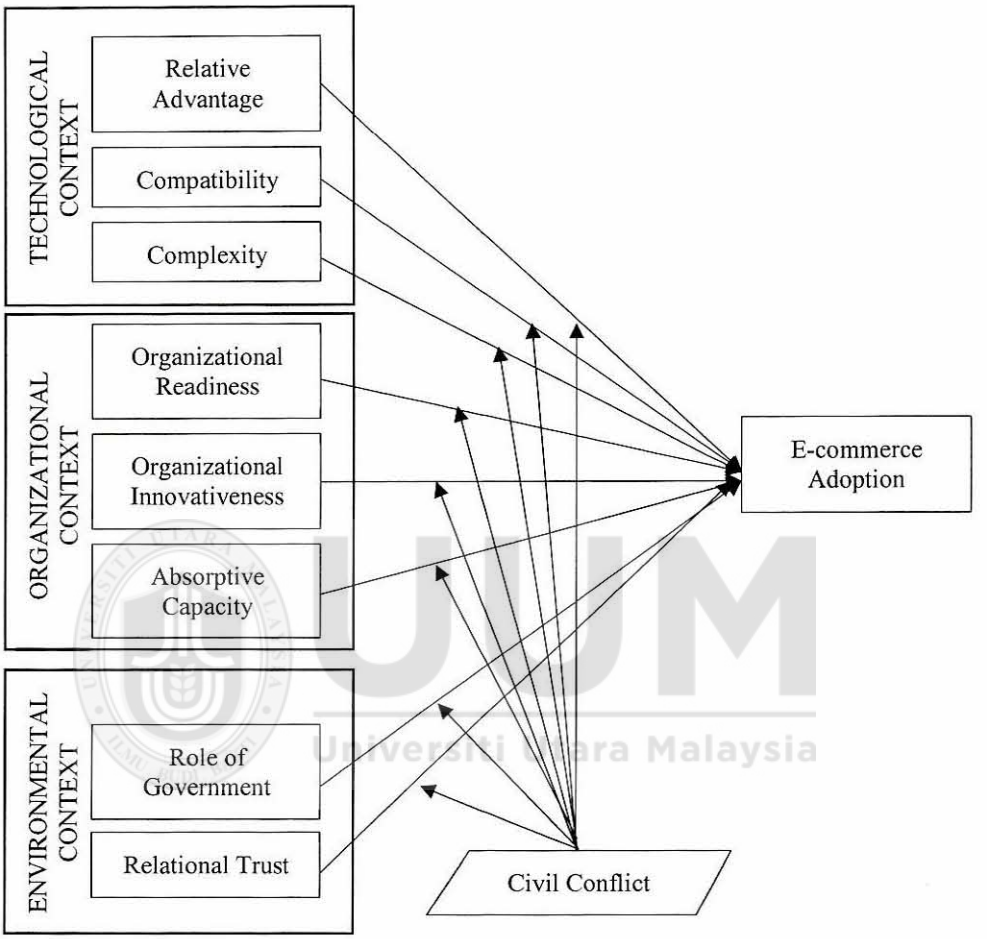


Figure 3. 1
The Proposed Research Model

3.3. Hypotheses Development

This section discuss about the development of framework and hypotheses for this study based on the relationship between technological, organizational and environmental

variables to the E-commerce adoption. The inclusion of civil conflict to moderate these hypotheses also discussed.

3.3.1. Technology Factors

The technology context for the adoption of technology by the SMEs in Iraq offer a different technological aspects that could influence the adoption and the extent of their influence. The technological elements such as the relative advantage that the firm will benefit through the adoption, the compatibility, and the complexity of the relevant technology to their existing business mechanisms is likely to influence the adoption process.

3.3.1.1. Relative Advantage

Relative advantage is a perception that reflects the degree of benefit from adopting E-commerce to an organization. These include cost reduction, faster decision-making, reduced marketing time, increased efficiency, and productivity (Yao & Zhu, 2012). Theorists argue that the benefits obtained from adopting technology are the key factors in adopting technology (Lyytinen & Damsgaard, 2011). According to the Innovation Diffusion Theory, potential adopters will implicitly or explicitly carry out cost-benefit analyses. They will adopt innovations that produce greater returns than the methods used previously (Rogers, 2003; Tarofder et al., 2013; Venkatesh & Bala, 2012; Yoon & George, 2013;). These previous studies found this variable to be positively related to the adoption of information technologies (IT), including E-commerce in SMEs.

Several studies have found Relative Advantage to be a significant predictor in making the E-commerce adoption decision (Ahmad et al., 2014; Alshamaila et al., 2013; Ghobakhloo et al., 2011; Hung et al., 2011; Kurnia, Karnali, et al., 2015; Picoto et al., 2014; Boumediene Ramdani et al., 2013; Sin et al., 2016). This study anticipates that if a firm's managers or owners view E-commerce as likely to produce greater benefit, they are more likely to adopt it. This leads to the following hypothesis:

Hypothesis (1): *There is a significant relationship between the relative advantage and the E-commerce adoption.*

3.3.1.2. Compatibility

Compatibility refers to the extent to which E-commerce is harmonized with the firm's values, needs and past experiences (Rogers, 2003). Prior research suggests that compatibility is a significant factor to be considered before SMEs can adopt E-commerce (Rajaguru & Matanda, 2013; Venkatesh & Bala, 2012). As it enhances its applicability of adopting E-commerce, significant changes are required to be incorporated into the firm's structure, work practices, routine, and/or processes. A higher degree of compatibility enables the adoption of E-commerce with minimum changes to the current status of E-commerce adoption (Hollenstein & Woerter, 2008;). Also, a higher level of compatibility increases the perception of benefits (Gao et al., 2012; van Rijnsoever et al., 2009):

Hypothesis (2): *There is a significant relationship between the Compatibility and the E-commerce adoption.*

3.3.1.3. Complexity

Complexity refers to the degree of difficulty encountered in order to understand and apply E-commerce (Rogers, 2003). Almoawi and Mahmood (2012) argued that the decision to adopt depends on the time that a firm takes to understand the complexities of the technological mechanism, the application, and the benefits of E-commerce. A higher level of complexity involved increases the level of uncertainty on successful adoption of E-commerce. This, in turn, increases the level of risk perceived in the adoption (Premkumar & Roberts, 1999; Ramdani et al., 2009). The SMEs express hesitation to adopt E-commerce if the technology is difficult to be understood, installed, learnt and used. Therefore, the easier it is to understand the technology, the faster and more immediately the adoption will take place and vice versa. This leads to the following hypothesis:

Hypothesis (3): *There is a significant relationship between the Complexity and the E-commerce adoption.*

3.3.2. Organization Factors

One of the most vital elements that will influence the adoption of E-commerce by SMEs in Iraq is the nature of the firm, including the different characteristic elements manifested within the organization. Thus, this research examines organizational readiness, organizational innovativeness and absorptive capacity on the adoption of E-commerce within the firm.

3.3.2.1. Organizational Readiness

Organizational readiness refers to the ability of a firm to successfully adopt, use and benefit from information technologies (Fathian et al., 2008). Adoption of E-commerce requires adjustment in the organization, workforce, process and structure involved in the similar environment (Rafferty et al., 2013). In order to adopt E-commerce in an appropriate manner, it is essential for the organization to ensure that there is an alignment between the technological change in organization and organizational capability, including financial resources and human resources (McElheran, 2015; Tarofder et al., 2013). This leads to the following hypothesis:

Hypothesis (4): *There is a significant relationship between the Organizational readiness and the E-commerce adoption.*

3.3.2.2. Organizational Innovativeness

A firm that has a culture of innovativeness, is more likely to consider adopting technological innovations, such as E-commerce, to improve coordination with its trading partners and increase the agility in its value chain activities (Venkatesh & Bala, 2012). Further, an innovative firm will be more responsive to the needs of its trading partners and thus is more likely to adopt innovations that can help improve the relationship with its partners (Yu et al., 2013). Organizational innovativeness has a significant influence on adoption behavior (Gabler et al., 2015b). However, organizational innovativeness has gained the least attention by researchers especially among the Middle East countries including Iraq (Lynch et al., 2010). Also, little of

previous studies known had used this variable in the area of the SMEs (Lynch et al., 2010). Thus, the following hypothesis is formulated:

Hypothesis (5): *There is a significant relationship between the Organizational innovativeness and the E-commerce adoption.*

3.3.2.3. Absorptive Capacity

Absorptive capacity is an important factor in determining successful operational performance of the SMEs (Denan et al., 2012). This finding is consistent with the previous studies (Todorova & Durisin, 2007), that shows SMEs absorptive capacity can influence firms' flexibility and response to the market change (Denan et al., 2012). The SMEs with a well-developed absorptive capacity can additionally use it as an instrument to improve the effectiveness of strategic alliances, and thus enhance firm performance (Flatten et al., 2011). But there is not much information on the effects of absorptive capacity with regard to small and medium-size enterprises or newly established firms (Cepeda, Cegarra, & Jimenez, 2012; Tzokas et al., 2015). Also the absorptive capacity dimensions have several significant relationships with technology transfer performance (Noor, 2010) and innovativeness (Cepeda, Cegarra, & Jimenez, 2012; Tzokas et al., 2015). Therefore, this work formulates the following hypothesis:

Hypothesis (6): *There is a significant relationship between the absorptive capacity and the E-commerce adoption.*

3.3.3. Environmental Factors

The environment that surrounds a firm is also one of the vital aspects that influence the adoption of new technology. For instance, the role of government and relational trust are the most vital elements that will influence the adoption of E-commerce by SMEs in Iraq.

3.3.3.1. The Role of Government

This variable was found insignificant in many SMEs in developed countries such as Canada, Greece, and Australia (Chatzoglou & Chatzoudes, 2016; Ifinedo, 2011). On the contrary, it has been found that role of government is important among SMEs in developing countries such as Saudi Arabia, Ghana, Nigeria, and Malaysia (Awa, Awara, et al., 2015; Awiagah et al., 2015; Chee et al., 2016; Makki & Chang, 2015).

As the results on the effects of the role of government on adoption of E-commerce are mixed between the developing countries and developed countries, it might be attributed to the different context of each study(Awa, Awara, et al., 2015; Chatzoglou & Chatzoudes, 2016; Chee et al., 2016; Mondragon et al., 2017). Therefore, it can be concluded that the level of economic development of each country is responsible for the different significance of government support (Chatzoglou & Chatzoudes, 2016; Osakwe et al., 2015).

This variable needs to be tested in a different environment, a conflict civil environment, and the extent of government support for the SMEs in these areas. This leads to the following hypothesis:

Hypothesis (7): *There is a significant relationship between the Role of Government and the E-commerce adoption.*

3.3.3.2. Relational Trust

A vast body of literature has pointed trust as a variable that directly affects the adoption of E-commerce (Al-hakim, 2012; Chong & Bai, 2014; Chong et al., 2013). For many of the adoption studies, the evidence for the predictions of a direct effect is not robust. Recent studies confirmed that trust plays an insignificant direct role in the adoption decision (Al-hakim, 2012; Chong & Bai, 2014). Trust between trading partners breeds a sense of psychological reassurance that the relationship will produce the expected results (Li et al., 2012). This study would thus expect that trust directs the motivation towards reaching the adoption decision by providing information about the advisability of engaging in a particular joint-action behavior like E-commerce adoption. This leads to the following hypothesis:

Hypothesis (8): *There is a significant relationship between the Relational Trust and the E-commerce adoption.*

3.3.4. Civil Conflict as Moderator

Civil conflict is chosen as the moderator to this study because limited studies focused on this variable (Khan, 2010; Khan et al., 2012). Wu and Zumbo (2008) outlined characteristics of selecting of moderator namely , (1) this variable is a trait, stable characteristic and also the background variable, (2) a third variable that modify the effect, (3) serve as a single role to provide the support between exogeneous and

endogenous, (4) uncorrelated with the exogenous variable, and (5) this variable is typically observed and not manipulated. These characteristics align with civil conflict as the moderator where civil conflict is a trait, stable characteristic and background variable for Iraq since this country faced the situation since 1970 (HIICR, 2015). Clearly, civil conflict is independent from variables of technological context (relative advantage, compatibility, complexity), organizational context (organizational readiness, organizational innovativeness and absorbtive capacity) and environmental context (role of government and relational trust) tested in this study. Furthermore, the level of civil conflicts are varies from one are to another area in Iraq that indicates that this variable should be observed and not able to be manipulated (HIICR, 2015).

There are limited studies that have included civil conflict in technology adoption, especially E-commerce services, where the nation is still facing high level of conflicts (HIICR, 2015; Khan, 2010; Khan et al., 2012).The inclusion of civil conflict extend the TOE because the TOE has previously neglected and ignored the influence of civil conflict environment. Wang et al. (2010) mentioned that TOE framework has unclear major constructs and the variables of TOE framework may vary with the context. Hence, several authors recommend adding some other variables to enrich TOE framework such as sociological variables, cognitive variables, technology readiness , ability to leverage ICT investment through different channels (e.g. organizational learning), professionals' experience and skills, managerial capabilities of change management, security concerns (e.g. civil conflict), government promotion and factors salient to the country context such as government policy/regulation, technology infrastructure and culture (Gangwar et al., 2014; Hossain & Quaddus, 2011; Jang, 2010; Oliveira & Martins, 2011; Wang et al., 2010; Wen & Chen, 2010). Also scholars like

Broekhuizen and Huizingh (2009) and Dawson (2014) suggested that this variable needs to be revisited through the empirical explanation particularly as a moderating in the conflicts and violence environment.

The researcher found two articles that tested civil conflict as moderator to the intention adopt e-government services in Iraq (Faaeq, 2014) and Afghanistan (Khan, 2010; Khan et al., 2012). However, both studies using individual as unit of analysis. Therefore the variables included in these studies posited civil conflict as moderator between individual behavior factors and e-government service.

Khan et al. (2012) suggested that civil conflict plays a moderating role in the adoption of online transaction. Simply increasing access to online services may not bear results without taking into consideration the technological factors, organizational factors, environmental factors and the ways that civil conflict and violence affect those people. Very limited study found by the researcher that used civil conflict as a moderator. The result from his studies suggested that civil conflict strengthens the relationship between skills related with electronic services and intention to use the technology (Khan, 2010; Khan et al., 2012). Similarly, another study found a civil conflict on technology use (Faaeq, 2014).

Hence, the hypothesis generated is as follows:

Hypothesis (9): *The relationship between technological, organizational, environmental factors and adoption of E-commerce is moderated by civil conflict.*

Based on the personal communication with the Head of Board Industrial Zone, '... the government spent hundreds of millions dollars in infrastructure but the government does not get an expected result, (personal communication, 9th February 2017). From the interview the researcher found that it is very important for a study to be conducted that related with the technology available in the country such as relative advantage, complexity and compatibility. Physical infrastructure is always a challenge in a conflict zone area (Lemmon, 2012). However, every successful entrepreneurs must always think ahead in creating the competitive advantage in order to sustain their business (Alexander, 2012). Therefore E-commerce is seen as the way to gain the business advantage in Iraq. Moreover, the entrepreneurs must have skills to operate the business in order to ensure it success (Lemmon, 2012). Because of this, it is important for this study to focus on the variables that are related with E-commerce technology. Therefore, for the technology context, the variables such as relative advantage, compatibility and complexity are seen as suitable variables included for this study. because of the situation in Iraq that is plagued by civil conflict and war, this study posit civil conflict is able to modify their relationships. Hence, the hypotheses generated is as follows:

9a: *Civil conflict moderates the relationship between the relative advantages and the E-commerce adoption.*

9b: *Civil conflict moderates the relationship between the compatibility and the E-commerce adoption.*

9c: *Civil conflict moderates the relationship between the complexity and the E-commerce adoption.*

Combining the information gained from the interviews, literatures and the related report, study related with E-commerce adoption also must looking at the business readiness. Innovation is very important in the conflict affected area because the situation require business's owners to be more creative in doing their business operations in with limited resources, including human and financial resources (SPARK, 2013). In order to handle this situation, business's owner also must ensure that they have the ability to acquire business skills related with this new business operations in E-commerce (Lemmon, 2012). Therefore, for the organizational context fot this study, the organization readiness, organization innovativeness and absorptive capacity are seen as suitable variables tested in this study. Interestingly, less studies have focused on investigating the role of civil conflict in this situation. So, this study generates the following hypothesis:

9d: *Civil conflict moderates the relationship between the Organizational Readiness and the E-commerce adoption.*

9e: *Civil conflict moderates the relationship between the Organizational Innovativeness and the E-commerce adoption.*

9f: *Civil conflict moderates the relationship between the Absorptive Capacity and the E-commerce adoption.*

Also, the government must play a very important role in the conflict affected area. The government must ensure that even though the country is facing the policy instability, but the activities related with economy must not stop (Alexander, 2012). Also, it is important to ensure the partnership through the collaboration activates to foster the

business (SPARK, 2013). Here, for this study, another two variables under environmental context that were used in this study namely the Role of Government and Relational trust is investigated under civil conflict situation.

Hence, the hypotheses generated is as follows:

9g: *Civil conflict moderates the relationship between the Role of Government and the E-commerce adoption.*

9h: *Civil conflict moderates the relationship between the Relational trust and the E-commerce adoption.*

3.4. Research Design

This section discusses the proposed plan to examine the research framework. In particular, this section explains on research nature and approach, research instrument, unit of analysis, sampling procedures, measurements, questionnaires translation and validation, and pilot study.

3.4.1. Operational of Variable and Measurement Design

This section will discuss about how the definition of variables operationalized in the context of this study. Also, adapted items from previous literatures and finally the summary of final measurement also presented.

3.4.1.1. E-commerce Adoption

E-commerce adoption refers to the use the ICT based network such as e-mail and websites to share business information, maintain business relationships, and conduct business transactions between stakeholders (Al-Bakri & Katsioloudes, 2015; Mirchandani & Motwani, 2001). In the context of this study E-commerce adoption has been operationalized as the use of ICT such as e-mail and websites to share business information, maintain business relationships, and conduct business transactions between stakeholders in the E-commerce environment. Table 3.1 exhibits measurement items for E-commerce adoption adapted from Wu, Mahajan, and Balasubramanian (2003) and Ifinedo (2011).

Table 3. 1
Items Representing E-commerce Adoption Adapted from Wu, Mahajan, and Balasubramanian (2003) and Ifinedo (2011)

No	Items
1	Our company uses E-commerce/e-payment, at all times, for its transactions
2	Our company provide customers with general information about our firm (e.g., via web sites, email, information boards).
3	Our company send customers regular updates about new products and other developments within our firm (e.g., via email, what's new page).
4	Our company provide information in response to consumer questions or requests (e.g., via Q&A page, intelligent agents).
5	Our company accept orders and payments electronically from customers.

3.4.1.2. Relative Advantage

These include 'direct benefits' and indirect benefits. Example of the direct benefits are as reduction in transaction errors and transaction costs, improved data accuracy and information quality, and faster application process. Meanwhile, the 'indirect benefits'

is associated with better customer services and improved relationship with business partners (Jovian Karnali & Kurnia, 2011). For the context of this study, the relative advantage has been operationalize as the degree to which an innovation such as new knowledge is perceived as being better than idea it succeeds (Hameed & Counsell, 2014). Table 3.2 presents the items for relative advantage adapted from Ifinedo (2011) and Al-Somali et al. (2015).

Table 3. 2
Items Representing Relative Advantage Adapted from Ifinedo (2011) and Al-Somali et al. (2015)

No	Items
1	E-commerce technologies allow our firm to manage its operations efficiently
2	E-commerce improve the quality of our operations
3	E-commerce enable us to perform our operations more quickly
4	E-commerce is useful to expand the market share for existing products/services.
5	E-commerce is useful to improve customer satisfaction.
6	E-commerce is useful to improve customer service.

3.4.1.3. Compatibility

Compatibility refers to how well E-commerce fits with the current business processes as well as the suppliers and customers (Ahmad, Abu Bakar, Faziharudean, & Mohamad Zaki, 2014). It refers to a situation where an innovation is perceived as consistent with the existing values, needs, and past experiences of the potential adopter (Sarkar, 2009). Table 3.3 below exhibits the items adapted from Ifinedo (2011) and Teo and Pian (2003) and Seyal and Rahman (2003).

Table 3. 3
Items Representing Compatibility Adapted from Ifinedo (2011) and Teo and Pian (2003) and Seyal and Rahman (2003)

No	Items
1	Use of E-commerce technologies fit well with the way we operate
2	Use E-commerce technologies fit into our working style
3	Use of E-commerce technologies is completely compatible with our current business operations
4	The skills required to use E-commerce are too complex for our employees
5	Integrating these technologies in our current work practices will be very difficult
6	Adoption of E-commerce fits the work style of firm.
7	Adoption of E-commerce is consistent with our business strategy

3.4.1.4. Complexity

Complexity relates to the level of ease with which the E-commerce technology can be understood by the firms (Vanderslice, 2000). For this study, this variable has been operationalized as the degree to which a firm perceives the adoption of E-commerce would be complicated. Table 3.4 lists the items for complexity adapted from Ifinedo (2011) and Premkumar and Roberts (1999).

Table 3. 4
Items Representing Complexity Adapted from Ifinedo (2011) and Premkumar and Roberts (1999)

No	Items
1	Using E-commerce technologies require a lot of mental effort
2	We will use E-commerce technologies in the future
3	Adoption of E-commerce is too difficult to be incorporated in our business operations.
4	We believe that an E-commerce is complex to implement.
5	We believe that developing an E-commerce is a complex process.

3.4.1.5. Organizational Readiness

Organizational readiness measures a firm has sufficient ICT sophistication and the financial resources in the adopting organization (Ramdani, Chevers, & Williams, 2013). For this study, this variable has been operationalized as availability of ICT knowledge, expertise and the financial readiness in the adoption of E-commerce. Table 3.5 displays the items for this variables adapted from Ifinedo (2011) and Zheng, Chen, Huang, and Zhang (2013).

Table 3. 5
Items Representing Organizational Readiness Adapted from Ifinedo (2011) and Zheng, Chen, Huang, and Zhang (2013)

No	Items
1	Our firm has a good understanding of how E-commerce technologies can be used in our business
2	We have the necessary technical, managerial and other skills to implement E-commerce.
3	Our business values and norms would not prevent us from adopting E-commerce in our operations.
4	We have enough financial allocations to adopt E-commerce.

3.4.1.6. Organizational Innovativeness

Organizational innovativeness refers to the willingness of the organization to encourage and support the innovation among the employees by providing the development of new knowledge and insights (Hussein, Omar, Noordin, & Ishak, 2016). It requires openness of the organization towards the new ideas, and inculcated them as a firm's culture (Hurley & Hult, 1998). Table 3.6 shows the items for this variable adapted from Gabler, Richey, and Rapp (2015a) and Venkatesh and Bala (2012).

Table 3. 6
Items Representing Organizational Innovativeness Adapted from Gabler, Richey, and Rapp (2015a) and Venkatesh and Bala (2012)

No	Items
1	Management actively seeks innovative ideas.
2	Innovation in this organization is perceived as too risky and is resisted.
3	Innovation in our firm's processes is encouraged.
4	Our Research and development infrastructure encourages us to be progressive, forward looking and creative.
5	The top manager of my firm favor a strong emphasis on Marketing of tried and the true products or services.

3.4.1.7. Absorptive Capacity

Firms' capability to exploit new, valuable external knowledge and predict the nature of technological advances (Cohen & Levinthal, 1990). For this study, this variable has been operationalized as Firms' capability to exploit new, valuable external knowledge and predict the nature of technological advances in the adoption of E-commerce. Table 3.7 list the items to measure this variable adapted from Limaj, Bernroider, and Choudrie (2016) and Noor (2010).

Table 3. 7
Items Representing Absorptive Capacity Adapted from Limaj, Bernroider, and Choudrie (2016) and Noor (2010)

No	Items
1	Searching for relevant external information is every-day business in our organization.
2	Our employees are encouraged to identify and consider external information sources.
3	We expect that our employees acquire relevant external information.
4	Ideas and concepts obtained from external sources are quickly analyzed and shared.
5	We work together across the organization to interpret and understand external information.
6	In our organization, external information is quickly exchanged between businesses.
7	We regularly organize and conduct meetings to discuss new insight.
8	Our employees have the ability to structure and use newly collected information.
9	Our employees are used to preparing newly collected information for further purposes and making it available.
10	Our employees are able to integrate new information into their work.
11	Our employees regularly engage in the development of prototypes or new concepts.
12	Our employees apply new knowledge in the workplace to respond quickly to environment changes.
13	Most of the time we are ahead of our competitors in developing and launching new products.
14	We have considerable capacity for technological development.

3.4.1.8. Role of Government

Role of Government refers to the assistance provided by the authority to encourage the spread of information system innovations in businesses (Gibbs & Kraemer, 2004). In the regards of this study, it refers to the assistance provided by the authority to encourage the spread of Information System innovations in businesses (Ifinedo, 2011). Therefore, it can support the argument the assistance provided by the authority to encourage the spread of information system innovations in SMEs is important in encouraging the adoption of E-commerce. Table 3.8 below exhibits items to measure civil conflict adapted from Ifinedo (2011) and Zhu and Kraemer (2005).

Table 3. 8
Items Representing the Role of Government Adapted from Ifinedo (2011) and Zhu and Kraemer (2005).

No	Items
1	The government is providing us with incentives to adopt E-commerce technologies
2	The government is active in setting up the facilities to enable E-commerce
3	The government plays an important role in promoting E-commerce in SMEs
4	Business laws support E-commerce.
5	The government is helping in giving assistance to help SMEs to use E-commerce
6	The government often informs us about the good points of E-commerce.

3.4.1.9. Relational Trust

Relational trust represent environmental factor that captures the stability of its relationship with trading partners who become their critical resources in the external environment (Chwelos, Benbasat, & Dexter, 2001). Iraq is a Muslim country that promotes the important of commerce and maintaining good relationship with everybody in their commerce activities. In regards of this study, relational trust has been

operationalized as maintaining the relationship with trading partners who become their critical resources in the external environment related with E-commerce adoption among SMEs. Table 3.9 below exhibits items to measure civil conflict adapted from Venkatesh and Bala (2012)

Table 3. 9
Items Representing Relational trust Adapted from Venkatesh and Bala (2012)

No	Items
1	Our business partner is competent and effective in its interactions with our organization.
2	Our business partner performs all of its roles very well.
3	Our business partner would act in our best interest.
4	Our business partner would do its best to provide assistance.
5	Our business partner is truthful in its dealings with our organization.
6	Our organization would characterize this business partner as being honest.

3.4.1.10. Civil Conflict

Civil conflicts are defined as clashes of interests and expressed struggles for political dominance among groups that have mismatched goals and interests (Heidelberg Institute for International Conflict Research 2008). In Iraq, this situation has been happened since 1970 and affected many activities related with SMEs in this country. As for this study, civil conflict has been operationalized as the clashes of interests and expressed struggles for political dominance among groups that have mismatched goals and interests that influence the adoption of E-commerce among SMEs. Table 3.10 below exhibits items to measure civil conflict adapted from Khan et al. (2012) and Wohl and Branscombe (2008).

Table 3. 10
Items Representing Civil Conflict Adapted from Khan et al. (2012) and Wohl and Branscombe (2008)

No	Items
1	I feel a sense of unease when I think about the war in Iraq.
2	I feel anxious when thinking about the war in Iraq.
3	When I think about the war in Iraq, I get upset.
4	I am very concerned about how the war in Iraq will end.
5	I worry this conflict in Iraq will only get worse.
6	War imposed limitations on our creative capabilities
7	The current war thwarted the expansion of our company work

3.4.1.11. Finalizing Measurement for the Study

There are ten variables studied under the TOE contexts. These are relative advantage, compatibility and complexity under Technology, the role of government and relational trust under Environmental and organizational readiness, organizational innovativeness and absorptive capacity under Organizational, while civil conflict is the moderator. The dependent variable is intention to adopt E-commerce. There is a total of 65 items in the questionnaires. The details is included in Table 3.11.

Table 3. 11
Constructs Measurements and Measurement Sources

Contexts	Variables	Source	Items
Technological	Relative advantage	Ifinedo (2011) and Al-Somali et al. (2015)	6
	Compatibility	Ifinedo (2011) and Teo and Pian (2003) and Seyal and Rahman (2003)	7
	Complexity	Ifinedo (2011) and Premkumar and Roberts (1999)	5
Organizational	Organizational Readiness	Ifinedo (2011) and Zheng, Chen, Huang, and Zhang (2013)	4
	Organizational Innovativeness	Gabler, Richey, and Rapp (2015a) and Venkatesh and Bala (2012)	5
	Absorptive Capacity	Limaj, Bernroider, and Choudrie (2016) and Noor (2010)	14
Environmental	The Role of Government	Ifinedo (2011) and Zhu and Kraemer (2005)	6
	Relational Trust	Venkatesh and Bala (2012)	6
Civil Conflict	Civil Conflict	Khan et al. (2012) and Wohl and Branscombe (2008)	7
Dependent Variables	E-commerce Adoption	Wu, Mahajan, and Balasubramanian (2003) and Ifinedo (2011)	5
Total			65

3.4.2. Questionnaires for the Study

All items for measurable constructs were measured using 6-point Likert scale anchored by '1' as 'strongly disagree', '2' as 'disagree', '3' as somewhat disagree', '4' as somewhat agree', '5' as 'agree' and '6' as strongly agree. The researcher chose 6-point Likert scale in order to arguments to avoid the possibilities of response sets due to the odd scale, where respondents are confounded to a particular way of responses independently with the questions asked from the items (Lei Chang, 1994; Rennie, 1982).

The options given in the questionnaires for this study were strongly disagree, disagree, somewhat disagree, somewhat agree, agree and strongly agree. Cooper, Schindler, and Sun (2003) state that the reliability of the measure increases when the number of scale increases. Besides, the number of scale chosen must approximate the degree of complexity of the construct (Cooper et al., 2003). In this study, the mid- point option of undecided or neither agree or disagree was not included because there is a tendency for respondents to choose it (Cook, 2005). The literatures have also showed that the midpoint has ambiguous meaning because it could imply "neutral", "don't know", "don't care" or "no opinion". There is also a possibility that selection of midpoint is a result of satisficing (Krosnick, 1999). Furthermore, Bendig (1954) study shows that 'the reliability of the rating scales is independent of the number of the categories on a given scale". Similarly, Matell and Jacoby (1971)also found that there is no specific pattern for reliability and validity using different number of alternatives. Hence, the use of 6 point scale is appropriate.

The questionnaires used in this study is divided into four main sections. The first section contains questions that elicit firm's background information including number of employees, organization location, type of industry, and the level of E-commerce adoption. The second section includes demographic information relating to the owner's profile such as their age, gender, qualification. The third section related with the technological (relative advantage, compatibility and complexity), organizational (organizational readiness, organizational innovativeness and absorptive capacity), environmental (role of government and relational trust), E-commerce adoption and civil conflict.

3.4.3. Questionnaire Validation and Translation

The questionnaire was translated into Arabic, where Arabic is the official language in Iraq so as to obtain useful information by the target sample in this study, the translation was done by the Language Center at the Lebanese French University (LCLFU).

The researcher first established English written questionnaire, where English is the language of the original instrument. To pre-test the original instrument, expert review is an inexpensive and relatively quick method for evaluating questionnaires (Olson, 2010; Presser & Blair, 1994). The reviewers' number could be small, ranging from three to over 20 experts (Olson, 2010; Presser & Blair, 1994). In view of this, the researcher engaged in a validation process in line with five academic experts to ensure the accuracy and reliability of the survey instrument, three of them are also do involved in business as depicted in Table 3.12. Items were evaluated for construction faults, ambiguity, flow, and sequencing. The questionnaire was then revised where appropriate.

Table 3. 12
Experts Who Validated the Questionnaires

Name	Position	Institution	Another Position
Prof. Dr. Wisnu S. Dewobroto	Head of Business Department	Trisakti university- Indonesia	Business Owner
Prof. Dr. Razmi Chik	Assistant Vice Chancellor	Universiti Teknologi MARA UiTM- Malaysia	
Prof. Dr. Mohammad Sadik	President of Lebanese French University	Lebanese French University- Iraq	Business Owner
Dr. Sharifah Zannierah Syed Marzuki	Head of Department of Research	Universiti Teknologi MARA UiTM- Malaysia	Business Owner
Dr. Yasmen Camall Ichan	Senior Lecture	Universiti Teknologi MARA UiTM- Malaysia	

Following these procedures, the English version of questionnaire was translated into Arabic language by the researcher and two bilingual academic experts specialized in E-commerce in Iraq. Afterwards, the back-translation process, the revised Arabic version of questionnaire was given to another two bilingual academic experts in E-commerce, who were different from the first group. Then, the results from the back to back translation, Arabic to English, were then compared with the original English version to validate the accuracy of the content.

To further refine the survey instrument, the researcher send the questionnaire to another 10 SMEs owners from Iraq who attended workshop in the US state of Texas on 28th-30th November 2016. Some questionnaire items were modified and explained further, which improved the questionnaire.

3.4.4. Pilot Study

The questionnaire is the main instrument of the survey study. A pilot study was conducted to collect the information and perceptions on E-commerce adoption determinants from SME owners. It is essential to test the research instrument on the target population before the actual data collection. The pilot test is considered a pre-testing of the research instrument (Zikmund et al., 2013). Therefore, performing a pilot study for the translated instrument before the actual data collection has many significant advantages to the success of study. This will provide the opportunity to remove ambiguity and increase clarity of some questionnaire items (Zikmund et al., 2013). In doing so, the questionnaires was polished and refined to ensure that respondents understand them and data is collected successfully.

The managers and owners of SMEs were the study sample because they are the main decision maker in the possibility of E-commerce adoption in their firms (Rai et al., 2009). Sample should be used to test the translated instruments (Dillman, 2011). According to Hill (1998) and Sarstedt, Ringle, Smith, Reams, and Hair (2014), sample between 10 to 30 questionnaires is an appropriate size for pilot study. Accordingly, 31 questionnaires were collected from a stratified random sample of participants from the owners or managers of SMEs in Erbil, Sulaymaniyah and Dohuk provinces.

After data were collected from 31 samples, the Cronbach's Alpha coefficient test were conducted to examine the internal consistency of the instrument. By using SPSS, all the dependent and independent variables were tested. The closer the Cronbach's alpha coefficient gets near to 1.0 are better. If the Cronbach's Alpha is less than 0.6, it is

considered as poor and thus, the items are less reliable. Those in the range of 0.7 are acceptable and those over 0.8 as good (Sekaran, 2013). By application of Cronbach's alpha formula, the instrument yielded satisfactory internal consistency for all the independent variables and the dependent variable, as well as the moderator variable. Table 3.13 shows the summary of the reliability results.

Table 3. 13
Constructs' Cronbach's Alpha Values

Variables	Number of Items	Cronbach's Alpha
Relative advantage	6	0.877
Compatibility	7	0. 775
Complexity	5	0.913
Organizational Readiness	4	0. 860
Organizational Innovativeness	5	0. 777
Absorptive Capacity	14	0. 975
The Role of Government	6	0.944
Relational Trust	6	0. 876
Civil Conflict	5	0. 970
E-commerce Adoption	5	0. 870
Total	63	

3.5. Population and Sampling

This study used all listed SMEs in Central Statistical Center directory, Ministry of Planning in Iraqi Kurdistan (Erbil province, Sulaimaniya province and Duhok province) as a research population. There are two reasons behind the selection of the Iraqi SMEs listed. Firstly, the small and medium enterprises in these areas (the Kurdish region) is one of the most productive projects throughout Iraq. In addition, they received the support from the local governments for the application of new technology (Roipmac, 2013; USAID, 2014; S. White, 2012). Secondly, civil conflicts has occurred

since 1970 and so far this is the governorates (Erbil, Sulaymaniyah, and Dahuk) predominantly Kurdish and the intensity of conflict are varies from one province to another (HIICR, 2015).

Unit of analysis can be organization, group or individual (McDougall & Oviatt, 2000), depending upon the nature and context of study. For the purpose of this study in order to get the sufficient data, the study choices subjects at the organizational unit of analysis; data was collected from the managers or owners of SMEs in the Kurdistan region, north of Iraq. They were chosen mainly because they have the authority to decide upon the adoption of E-commerce in the firm. This study collected data from managers and owners who suffer from the impact of wars and civil conflicts.

A sample is a subgroup or subset of the population (Sekaran, 2013). Several techniques are available for selecting the samples. Sekaran (2013) specify three possible techniques for the purpose of results generalization. These include (i) simple random sampling, (ii) systematic sampling, and (iii) cluster sampling. For this study, a stratified sampling method based on the civil conflict provinces followed by simple random samping for each province. The stratified sampling was used because it reduces the sample size required in order to achieve a given precision (Neyman, 1934). For the second step of data collection, the researcher used simple random sampling in order to get the proportionate number of sampling required as the sample for this study. The study covered all SMEs in various sectors in the three governorates (Erbil, Sulaimaniya, and Duhok). The selection of these three provinces are based on the ability of the researcher to collect data from this regions. Moreover, the Kurdish region of these provinces allow the SMEs to perform their commerce activities, and it is safe for public

to visit the areas. A total of 5454 SMEs are reported in these areas that contribute to 24% of the total SMEs in Iraq (22,600 SMEs), according to statistics of the Ministry of Planning for 2015 (IMP, 2015). The number of sample is determined based on suggestion by Krejcie and Morgan (1970), and total sample required for this study is 361 firms. Table 3.14 shows the total listed SMEs.

Table 3. 14
Population and Sampling

Province	Total population	Sampling
Erbil	3,014	200
Sulaimaniya	1,600	108
Duhok	840	53
Total	5,454	361

Sources: Ministry of Planning for 2015

3.6. Data Collection

In the beginning, the Ministry of Trade in the Kurdistan region of Iraq was approached. The meeting was with Dr. AbdulRazak, head of board of industrial zones, who was very cooperative and provided all the required information for SMEs in the Kurdistan region. Then, the questionnaires were distributed to three provinces of Erbil, Sulaymaniyah and Duhok.

The survey package included a copy of the questionnaire and an invitation letter printed on the university's official letterhead. The letter asked the participants for their cooperation and provided information that explains the objectives of the study, definition of key concepts, and an estimated time (between 10 -15 minutes) for completing the questionnaire. The letter also assured anonymity and confidentiality of

their responses. It was concluded by thanking the respondents for their effort and time in taking part in the survey. Overall, the responses were requested within one week from all respondents.

However, the self-administered data collection modes usually obtains lower responses rate. Therefore, follow-up procedures became very important (Dillman, 2011). Dillman (2011) suggests that response rates will usually be lower than those normally attained without follow-up of respective respondents. Therefore, after a week, firms that did not respond were reminded through either telephone calls or self-visits (Dillman, 2011; Sekaran, 2013)

The researcher distributed 520 questionnaires for SMEs managers or owners. After one month, the researcher collected 393 responses, 10 were incomplete and thus were omitted. Multivariate outliers were also spotted by using Mahalanobis, in conjunction with the standardized values to distinguish univariate outliers, 10 multivariate outliers. Since only at least adopted the level 1 (Level 1 Static Web: The first level of E-commerce adoption is Internet presence. At this level, companies have made the adoption decision but the implementation is still in process, that is, publishing basic organization information on the web without any interactivity) responses are subjected to analysis, the researcher excluded 80 responses from respondents who reported that they are at the zero level (Level 0 e-mail adoption: A firm in level 0 is one that has an e-mail account but does not have a Web site). Out of 293 valid responses, table 3.15 summarizes the data collection details:

Table 3. 15
Summary of Data Collection

Province	Actual number of distributed questionnaires	Responses collected	Incomplete	Outliers	Level 0 adoption	Eligible responses
Erbil	300	249	10	10	80	293
Sulaimaniya	150	94				
Duhok	70	50				
Total	520	393				
Response rate			81.16%			

Sources: (develop for this study)

3.7. Method of Data Analysis

There are several steps such as; coding, screening of data and selection of strategy and tool for data analyses to be completed prior to data analysis. The data collected from the respondents must be entered properly and carefully to avoid any awkwardness at later stages. In addition the data was screened to detect data related mistakes or errors by performing descriptive statistics of the variables (Sekaran, 2013).

3.7.1. Data Coding

After data collection, SPSS (Statistical Package for the Social Sciences) were used for coding the data (Zikmund et al., 2013). It is very essential to code the data accordingly and to arrange it consistently in the required numerical pattern.

3.7.2. Data Screening

The initial data screening is very essential in figuring out any of the possible violations of the key assumptions with respect to the application of multivariate techniques used

for data analysis. Also, the primary data screening approach helped to get better hold of the data for added analysis (Hair, 2010). After data coding and entry, the following preliminary data analyses were carried out: (1) Missing Data and Data Entry Error Treatment, (2) Outliers Identifications, (3) normality, and (4) multicollinearity test (Hair, 2010; Tabachnick, Fidell, & Osterlind, 2001).

3.7.3. Data Analysis using Smart PLS

According to Byrne (2013), structural equation modeling (SEM) including Smart PLS as a powerful multivariate analysis technique, also helps in modeling the causal relationship between constructs contributes in a study. For the current study, the direct relationship of eight independent variables (Relative Advantage, Compatibility, Complexity, Organization Readiness, Organization innovativeness, Absorptive Capacity, Role of the Government, and Relational Trust) with the dependent variable (E-commerce Adoption), and the moderating effect of Civil Conflict on the above mentioned relationships simultaneously have been assessed.

The researcher choose SmartPLS over Covariance Based Structural Equation Model (CB-SEM) such as AMOS, based on the suggestion by previous scholars (Anderson & Gerbing, 1988; Hair, Hult, Ringle, & Sarstedt, 2014; Hair, Ringle, & Sarstedt, 2013; Sarstedt, Ringle, Smith, Reams, & Hair, 2014) because TOE frameworks where variables used are varies from one research setting to another research setting. Whereas, CB-SEM such as AMOS is more suitable for theory testing, theory confirmation, or comparison of alternative theories (Hair et al., 2014). Furthermore, SmartPLS offers bootstrapping and blindfolding procedures. A bootstrapping procedure was applied to

identify the significance level for loadings and path coefficients, and a blindfolding procedure to identify the strength of relationship for hypotheses tested in this study.

3.8. Summary of the Chapter

This chapter outlines the discussion related with the development of the research framework and research methodology. This study used survey as the method of data collection, therefore the research design detailed out with the operational variable and measurement for all variables, the questionnaires design, questionnaires validation, translation and pilot study. Moreover, this chapter also discuss about the population and sampling and data collection. Method of data analysis also been explain here, however the data analysis is reported in the Chapter 4.

CHAPTER FOUR
DATA ANALYSIS AND RESULTS

4.1. Overview of the Chapter

It starts with data screening and preliminary analysis including missing value analysis, assessment of outliers, and normality. Later, the research presents the profile of responding firms and respondents of this study. In order to answer the research objectives of this study, data were analyzed using Smart PLS version 3.0.

This chapter explains the data analysis and results to achieve objectives for this study and to test the suggested research hypotheses. This chapter introduces the necessary steps to ensure that the results are valid and reliable. Section 4.2 started with respond rate, section 4.3 shown the data screening and preliminary analysis, Section 4.4 focuses on profile of the responding firms while sections 4.5 explore respondent's demographic data. Then, section 4.6 focuses on path model assessment. Both measurement and structure models are evaluated in this section. Finally, summary of study's results is presented in the section 4.7.

4.2. Response Rate

A total of 520 questionnaires were distributed to major SMEs in three major cities in the northern Iraq, namely province of Erbil, Sulaymaniyah and Duhok. The data collection process lasted about 2 months which starts in the first week of December 2016 and ended on the third week of January 2017. Based on the data collection effort,

a 393 questionnaires were returned and analyzed. The returned questionnaires were carefully examined for their completeness, and ten of those questionnaires were discarded because large sections of the questionnaires were incomplete. A total of 80 questionnaires were further discarded as those responses were at the level '0' of adoption of E-commerce, which indicated that those SMEs just use technology as a mean of communication only and cannot be classified as E-commerce yet as mentioned by (Al-Somali, 2012; Ramayah et al., 2016).

The total number of usable responses was 303 representing a response rate of 81.16 per cent of the total sampling. The high response rate recorded because this study was considered as an official study, whereby the Ministry of Industry and the Ministry of Trade approved the data collection exercise and urged the managers and owners of SMEs to provide the feedback through the questionnaires.

4.3. Data Screening and Preliminary Analysis

The data screening process is essential before data can be used for multivariate data analysis (Hair, 2010; Sekaran, 2013). It includes the treatment of data entry errors, missing data, identification of outliers, normality test and multicollinearity (Hair et al., 2011). The following section provides the details of data screening process

4.3.1. Missing Data and Data Entry Error Treatment

Out of the total 41,265 data points input in the SPSS, there were 130 data that found randomly missing, and make it a 0.3% of the total data set. In general, researchers hold

a consensus that missing rate of 5% or less is considered non-significant, as there is no certain agreeable criterion of the missing values in a data set for making a valid statistical inference (Schafer, 1999; Tabachnick et al., 2001). Therefore, if the total percentage of missing data is 5% or less, therefore researchers were advised to remove this case rather than replacing those missing values with mean. With this regards, 10 of the questionnaires had been removed leaving a total of 303 questionnaires qualified for further analysis.

4.3.2. Outliers Identifications

An outlier is an observation with unique characteristics that distant from other values in a random sample from a population (Hair, 2010). It can be an extreme value to a particular question, or extreme values to all questions. In general, statistical inferential tests can be relatively sensitive to outliers, often because, the calculations rely on squared deviations from the mean (Hair, 2010). Although, PLS-SEM is not affected by outliers (Hair, 2010; Hair et al., 2011) several researchers recommended an examination and elimination of observed outliers before starting the hypotheses testing (Hair , Hult, Ringle, & Sarstedt, 2016).

The following steps were taken in this regard. First of all, the frequency was tabularized for all variables, by using minimum and maximum statistics, in order to detect any observation which appears to be outside the SPSS value labels as a result of wrong data entry. As per the initial analysis of frequency statistics, none of the values were found out of the defined range. Secondly, the data was assessed for univariate outliers while applying the standardized values with a cut-off of ±3.29 ($p < .001$) as suggested by

(Tabachnick & Fidell, 2014). While applying the standards set by Tabachnick and Fidell (2014), none of the case was found using standardized values as potential univariate outliers.

Multivariate outliers were also spotted by using Mahalanobis, in conjunction with the standardized values to distinguish univariate outliers, 10 multivariate outliers (3, 22, 34, 45, 49, 65, 79, 112, 113, and 301) were identified and accordingly removed from the dataset for the reason that they could affect the accuracy of the data analysis technique. Thus, after removing 10 multivariate outliers, the final dataset in this study was 293.

4.3.3. Normality Test

An estimation of the normality data is a prerequisite for many statistical tests. It is important to confirm that the data are not too far from normal distribution. An extremely non-normal data is problematic in the evaluation of the parameters' significances and distorts the results of multivariate analysis (Hair, 2010). Hair et al. (2016) suggests that even though PLS has soft constraint regarding normality assumption, it is essential to verify that the data are not extremely non-normal, as extremely non-normal data increases standard errors obtained from bootstrapping procedure. Therefore, researcher should still examine normality before performing PLS analysis.

Accordingly, using descriptive analysis incorporated in SPSS 23, skewness and kurtosis test have been executed for all items in each survey separately. Based on a preliminary analysis, the values of skewness are within the acceptable range outside the range of +1 to -1, however, one value for kurtosis (civil conflict) that is reported departed from the

acceptable range outside the range of +1 to -1 Hair et al. (2016). However, Tabachnick and Fidell (2014) claimed that the the problem related with positive kurtosis disappear with the samples of 100 and more. Table 4.1 reports the normality of the data.

Table 4. 1
Normality of the Data (N=293)

Variables	Skewness	Std. Error of Skewness	Kurtosis	Std. Error of Kurtosis
Relative advantage	.100	.142	-.625	.284
Compatibility	-.104	.142	.041	.284
Complexity	-.461	.142	.171	.284
Organizational Readiness	-.335	.142	.065	.284
Organizational Innovativeness	-.829	.142	.763	.284
Absorptive Capacity	-.380	.142	.274	.284
The Role of Government	.521	.142	-.062	.284
Relational Trust	-.286	.142	.454	.284
Civil Conflict	-.777	.142	1.351	.284

4.4. Profile of the Responding Firms

This section explores the profiles of the responding firms, which includes the number of employees, organization location, type of industry, and the current E-commerce status in the firm. The descriptive analysis are presented and discussed below.

4.4.1. Number of Employees

Iraq's Central Statistical Organization of the Ministry of Planning has classified SMEs on the basis of the number of employees. They are categorized as medium companies which have 10-29 full time employees and small companies that have less than 10 full time employees (IMP, 2013). Table 4.2 classified the responding firms according to the

number of full time employees. It shows that approximately 61% of the responding firms had less than 10 employees which represent small firms. Limited responses were from medium firms where 39% of the responding firms had employees between 10 and 29.

Table 4. 2
Frequencies and Percentages for Number of Employees

Size of firm	Number of Employees	Frequency	Percent
Small	1-9	176	60.1
Medium	10-29	117	39.9
Total		293	100.0

4.4.2. Organization Location

Table 4.3 present the frequencies and percentages of the different locations. The majority of the firms that responded were from Erbil (64.5%) followed by Sulaymaniyah (22.2%), then Duhok with a response of 13.3% each. The data reflects the same percentages of the population as the major percentage of SMEs are located in Erbil, the capital of the Kurdish region in Iraq. These places have a high concentration of manufacturing activities as some areas here are Free Trade Zone and industrial area.

Table 4. 3
Frequencies and Percentages for Organization Location

Organization Location	Frequency	Percent
Erbil	189	64.5
Sulaymaniyah	65	22.2
Duhok	39	13.3
Total	293	100.0

4.4.3. Type of Industries

The majority of the firms that responded to the survey were under the tailoring and furnishing service sector (23.2%). followed by those in the food products (21.5%), pharmacy sectors (21.5%) money changer and transfer sector (14.3%), paper products and stationery sector (10.6%), and electrical appliances and products sector (8.9%). Refer to Table 4.4.

Table 4. 4
Frequencies and Percentages for Type of Industry

Type of industry	Frequency	Percent
Tailoring and Furnishing Service	68	23.2
Food Products	63	21.5
Pharmacy	63	21.5
Money changer and Transfer	42	14.3
Paper Products and Stationery	31	10.6
Electrical Appliances and Products	26	8.9
Total	293	100.0

4.4.4. Level of E-commerce Adoption

One of the research questions of the study was to determine the level of E-commerce adoption among SMEs. E-commerce development in SMEs is a phased process in which firms are found to move from no online presence on the Web, through to a static, informational presence and, ultimately, to a more sophisticated applications that enable transactional trading, including online buying and payment, and, more importantly, integrating business processes allowing most business transactions to be conducted electronically.

The questions in this part assesses the level of E-commerce adoption among SMEs in Iraq. Respondents were asked to choose from five choices that indicated the level adopted of E-commerce between level '0' to level '4'. For this study, the levels of adoption have been describes as: level '0' where firms only focus on e-mail adoption only, level '1' where firms start using the static web, level '2' refers to the condition where firms started to adopt interactive web presence, level '3' refers to firms that already use the transitive web and level '4' are those that adopt the E-commerce as their business transformation. For this study, level '0' was not classified as the E-commerce adoption, therefore firms that belong to this level were discarded from analysis.

During the data screening process, there were 80 firms that have been identifies as the level '0' and not qualified for further analysis. There were 201 firms (78.8%) belongs to level '1', 53 firms (18.1%) belong to level '2', eight firms (2.7%) belong to level '3' and one firm (0.4%) belong to level '4' of E-commerce adoption. Please refer to table 4.5.

Table 4. 5
Frequencies and Percentages for the Current E-commerce Status

E-commerce Status	Frequency	Percent	Level
Connected to the Internet with e-mail but no website	32	10.9	1
Static Web: that is, publishing basic organization information on the web without any interactivity	199	67.9	1
Interactive web presence: that is, accepting queries, e-mail, and form entry from users	53	18.1	2
Transactive web: that is, online selling and purchasing of products and services including customer service.	8	2.7	3
Integrated web: allowing most of the business transactions to be conducted electronically.	1	0.4	4
Total	293	100.0	

Note for level of E-commerce adoption – Level 1 refer as 'static web'; Level 2 refer as 'interactive web presence'; Level 3 refer as 'transactive web'; and Level 4 refer as 'business transformation'

4.5. Profile of Respondents for the Study

In this section, managers and owners are described by the variables of gender, age, education profile in terms of degree and experience in the current position. Table 4.6 shows the distribution of gender among the managers and owners who responded to the survey. It can be seen that males far outnumber females in the sample, with 86% and 14%, respectively. This is not unusual of the work environment in Iraq where women are not allowed to work in any job that exposes them to contact with men, especially in the private sector.

Respondents were requested to give their age, and table 4.6 shows the distribution of age, measured in years. Respondent age varies from 18 to 60 years or above. As can be seen that the largest proportion (53.9%) of respondents by age group were those in the 30-39 years old category, followed by those in the 40-49 year category (31.1%). 10.2% of the respondent aged between 18-29 years old. The minority case included those

falling in the 50-60 or older age categories at 4.8%. Overall, the majority of respondents (85%) were aged between 30 and 49 years of age.

The respondents were given all the possible options (High School, Diploma, Degree, Masters, and Doctorates) to choose in order to describe their educational level. As shown in Table 4.6, out of the total 293, 121(41.3%) were diploma degree holders, 106 (36.2%) reported has a degree level education followed by high school (15.4%) and masters holders (6.5%). There were two respondents found from doctorates category. Approximately 65.9% of the respondents had (11-15) years of experience in their current position. With only 24.6% having been (6-10) years' experience. A little over a seventeen of the respondents (6.1%) had more than 15 years of experience in their current position. Less than 5 % had (1-5) years of experience in their current position.

Table 4. 6
Frequencies and Percentages for Demographics Information

Description		Frequency	Percent
Gender	Male	252	86.0
	Female	41	14.0
	Total	293	100.0
Age	18-29	30	10.2
	30-39	158	53.9
	40-49	91	31.1
	50-60+	14	4.8
	Total	293	100.0
Education	High School	45	15.4
	Diploma	121	41.3
	Degree	106	36.2
	Master	19	6.5
	Doctorate	2	0.7
	Total	293	100.0
Owner's Tenure (Year)	Less than one	0	0
	1-5	10	3.4
	6-10	72	24.6
	11-15	193	65.9
	More than 15	18	6.1
	Total	293	100.0

4.6. Data Analysis using Structural Equation Model

The researcher applied multivariate data analysis using Partial Least Squares Structural Equation Modeling (PLS-SEM), SmartPLS version 3.0 to test the hypotheses developed for this study. The researcher choose SmartPLS over Covariance Based Structural Equation Model (CB-SEM) such as AMOS, based on the suggestion by previous scholars (Anderson & Gerbing, 1988; Hair, Hult, Ringle, & Sarstedt, 2014; Hair, Ringle, & Sarstedt, 2013; Sarstedt, Ringle, Smith, Reams, & Hair, 2014) because TOE frameworks where variables used are varies from one research setting to another

research setting. Whereas, CB-SEM such as AMOS is more suitable for theory testing, theory confirmation, or comparison of alternative theories (Hair et al., 2014). Furthermore, SmartPLS offers bootstrapping and blindfolding procedures. A bootstrapping procedure was applied to identify the significance level for loadings and path coefficients, and a blindfolding procedure to identify the strength of relationship for hypotheses tested in this study.

In evaluating and reporting the result, this study follows a guideline provided by Hair, Hult, Ringle and Sarstedt (2014). Hence, The analysis assess two main parts which are measurement model (outer model) and structural model (inner model) (Wong, 2013). The measurement model is used to evaluate the reliability and validity of the model (framework) and the structural model, through the bootstrapping procedure, is used to conduct the hypothesis testing. Furthermore the analysis of structural model produce the effect size and predictive relevance values of the constructs in the study.

4.6.1. Assessment of Measurement Model

The model for this study is a reflective model. In Smart PLS, the model assessment consist of two parts, namely assessment of measurement model and assessment of the structural model. Evaluation of measurement model step analyzed to ensure that the framework developed achieve its reliability and validly. The reflective measurement model assessment for this study follows these steps (1) indicator reliability, (2) internal consistency reliability, (3) validity that has two types namely (a) convergent validity, and (b) discriminant validity (Hair et al., 2016).

4.6.1.1. Indicator Reliability Assessment

As suggested by Hair et al. (2016), the indicators for outer loadings must be more than 0.7, but loadings between 0.40 and 0.70 should be careful before deleting these values, especially if they have an effect on values of the value of composite reliability (CR) or average variance extracted (AVE). Loadings more than 0.70 shows that the construct describes more than 50% of the indicator's variance (Sarstedt et al., 2014). For the next stage of this study, only one item was deleted due to the low outer loading and to increase the value of AVE. The loading values for all items are presented in Table 4.7.

4.6.1.2. Internal Consistency Reliability Assessment

The result of composite reliability (CR) analysis for this study is also presented in Table 4.7. The table shows that CR of all constructs were high; ranging between 0.997 and 0.956. These numbers are above the CR threshold of 0.7, providing an evidence of internal consistency for all constructs. Therefore, it can be concluded that constructs are appropriate for further analysis (Davcik, 2014; Hair et al., 2011; Sarstedt et al., 2014).

4.6.1.3. Convergent Validity Assessment

Convergent validity access refer to what extent an item correlated with alternative items in the same construct (Hair et al., 2011). Fornell and Larcker (1981) proposed the Average Variance Extracted (AVE) as a criterion for testing convergent validity. Validity assessment for reflective measurement model are evaluated using convergent and discriminant validity. The results in Table 4.7 demonstrate the AVE of each construct. It shows that AVEs were ranging between 0.984 and 0.774. Based on rule of

thumb, an AVE value of more than 0.5 ensures sufficient convergent validity. It is argued that if a construct has AVE's value of more than 0.5, researchers can claim that this construct is able to explain more than half of its indicators' variance (Fornell & Larcker, 1981; Hair et al., 2011; Henseler et al., 2009; Sarstedt et al., 2014). Hence, the results of AVE analysis demonstrate sufficient and satisfied convergent validity.

Table 4. 7
Results Summary of Measurement Model

Latent Variable	Indicator	Loading	Composite Reliability	AVE	Discriminant Validity
E-commerce Adoption	EC1	0.919	0.968	0.859	Yes
	EC2	0.955			
	EC3	0.950			
	EC4	0.931			
	EC5	0.877			
Relative Advantage	RA1	0.912	0.963	0.812	Yes
	RA2	0.917			
	RA3	0.913			
	RA4	0.914			
	RA5	0.883			
	RA6	0.865			
Compatibility	COMT1	0.948	0.968	0.835	Yes
	COMT2	0.952			
	COMT3	0.944			
	COMT5	0.753			
	COMT6	0.936			
	COMT7	0.934			
Complexity	COMX1	0.988	0.997	0.984	Yes
	COMX2	0.993			
	COMX3	0.994			
	COMX4	0.993			
	COMX5	0.991			

Continue

Table 4.7 (Continued)
Results Summary of Measurement Model

Latent Variable	Indicator	Loading	Composite Reliability	AVE	Discriminant Validity
Organizational Readiness	OR1	0.957	0.956	0.845	Yes
	OR2	0.978			
	OR3	0.967			
	OR4	0.757			
Organization Innovativeness	OI1	0.967	0.990	0.953	Yes
	OI2	0.982			
	OI3	0.985			
	OI4	0.982			
	OI5	0.965			
Absorptive Capacity	AC1	0.905	0.990	0.878	Yes
	AC2	0.927			
	AC3	0.921			
	AC4	0.928			
	AC5	0.937			
	AC6	0.943			
	AC7	0.942			
	AC8	0.953			
	AC9	0.945			
	AC10	0.946			
	AC11	0.936			
	AC12	0.948			
	AC13	0.939			
	AC14	0.945			
Role of Government	RG1	0.957	0.986	0.923	Yes
	RG2	0.963			
	RG3	0.969			
	RG4	0.958			
	RG5	0.957			
	RG6	0.962			

Continue

Table 4.7 (Continued)
Results Summary of Measurement Model

Latent Variable	Indicator	Loading	Composite Reliability	AVE	Discriminant Validity
Relational Trust	RT1	0.924	0.977	0.874	Yes
	RT2	0.944			
	RT3	0.954			
	RT4	0.939			
	RT5	0.934			
	RT6	0.914			
Civil Conflict	CC1	0.937	0.959	0.774	Yes
	CC2	0.962			
	CC3	0.956			
	CC4	0.935			
	CC5	0.926			
	CC6	0.694			
	CC7	0.696			

4.6.1.4. Discriminant Validity Assessment

The discriminant of validity for this study was determine using the discriminant validity namely; Fornell and Larcker criterion (Fornell & Larcker, 1981; Hair et al., 2011; Sarstedt et al., 2014). Fornell and Larcker (1981) suggest that discriminant validity is established when the AVE of an individual construct is greater than the squared multiple correlation of that construct with other constructs. On the other hand, the second method focus on the indicators' cross loadings was used to assess discriminant validity, where an indicator should load more on its postulated construct more than the other constructs (Hair et al., 2011; Sarstedt et al., 2014). Table 4.8 below exhibits FornellLarker criterion. The square root of AVE values represented by value on the diagonal and the non-diagonal elements represent the latent variable correlations

(LVC). It can be seen that all the square root of AVE values were higher than LVC. Thus, this would suggest that all indicators loaded distinctly on the specified construct they measured, thus signifying discriminant validity of all the constructs. Therefore, verify that all constructs in the path model exhibits discriminant validity.

Table 4. 8
Discriminant Validity (Fornell-Larcker Criterion)

	1	2	3	4	5	6	7	8	9	10
1. AC	**0.937**									
2. CC	0.284	**0.880**								
3. COMP	0.427	0.279	**0.914**							
4. COMX	0.151	0.131	0.044	**0.992**						
5. EC	0.437	0.385	0.357	0.269	**0.927**					
6. OI	0.709	0.221	0.387	0.129	0.371	**0.976**				
7. OR	0.633	0.246	0.455	0.163	0.428	0.764	**0.919**			
8. RA	0.424	0.316	0.642	0.049	0.337	0.358	0.490	**0.901**		
9. RG	0.235	0.016	0.163	0.086	0.085	0.132	0.252	0.172	**0.961**	
10.RT	0.339	0.411	0.26	0.104	0.353	0.326	0.397	0.362	0.109	**0.935**

*The bold fonts in the leading diagonals are the square root of AVEs

Note: AC-Absorptive Capacity; CC-Civil Conflict; COMT-Compatibility; COMX-Complexity; EC-E-commerce adoption; OI-Organization innovativeness; OR-Organization Readiness; RA-Relative Advantage; RG-Role of the Government; RT-Relational Trust.

4.6.2. Assessment of Structural Model

The nature of effects between exogenous and endogenous differs for models with and without moderation effect (Hair, Hult, Ringle, & Sarstedt, 2014). Since one of the objectives of this study is to test the significance of the main effects between all exogenous and endogenous constructs, the PLS analysis should be initially executed without the moderator, and then the interaction effects can be safely tested in another model (Hair et al., 2014). Therefore this study involved the following steps; (1) assessment of collinearity; (2) assessment of coefficient of determination (R^2); (3)

assessment of structural model path coefficients; (4) assessment of predictive relevance; and (5) assessment of effect sizes. Below is the steps involved for the assessment of structural model.

4.6.2.1. Assessment of Collinearity

Variance Inflation Factor (VIF) indicates a potential collinearity problem when the tolerance value of 0.20 or below and a VIF value of 5 and higher (Hair et al., 2014). Using PLS algorithm, VIF values for all constructs are generated and presented in Table 4.9. The values vary between 3.147 and 1.091 which less than the cut-off value of 5. Therefore, it can be concluded that the proposed path model free of multicollinearity issue.

Table 4. 9
Collinearity Assessment

Variables	VIF	Collinearity (VIF>5)
Absorptive Capacity	2.318	No
Civil Conflict	1.316	No
Compatibility	1.846	No
Complexity	1.091	No
Organization Innovativeness	3.147	No
Organization Readiness	3.019	No
Relative Advantage	2.008	No
Role of The Government	1.129	No
Relational Trust	1.393	No

4.6.2.2. Assessment of Coefficient of Determination (R^2)

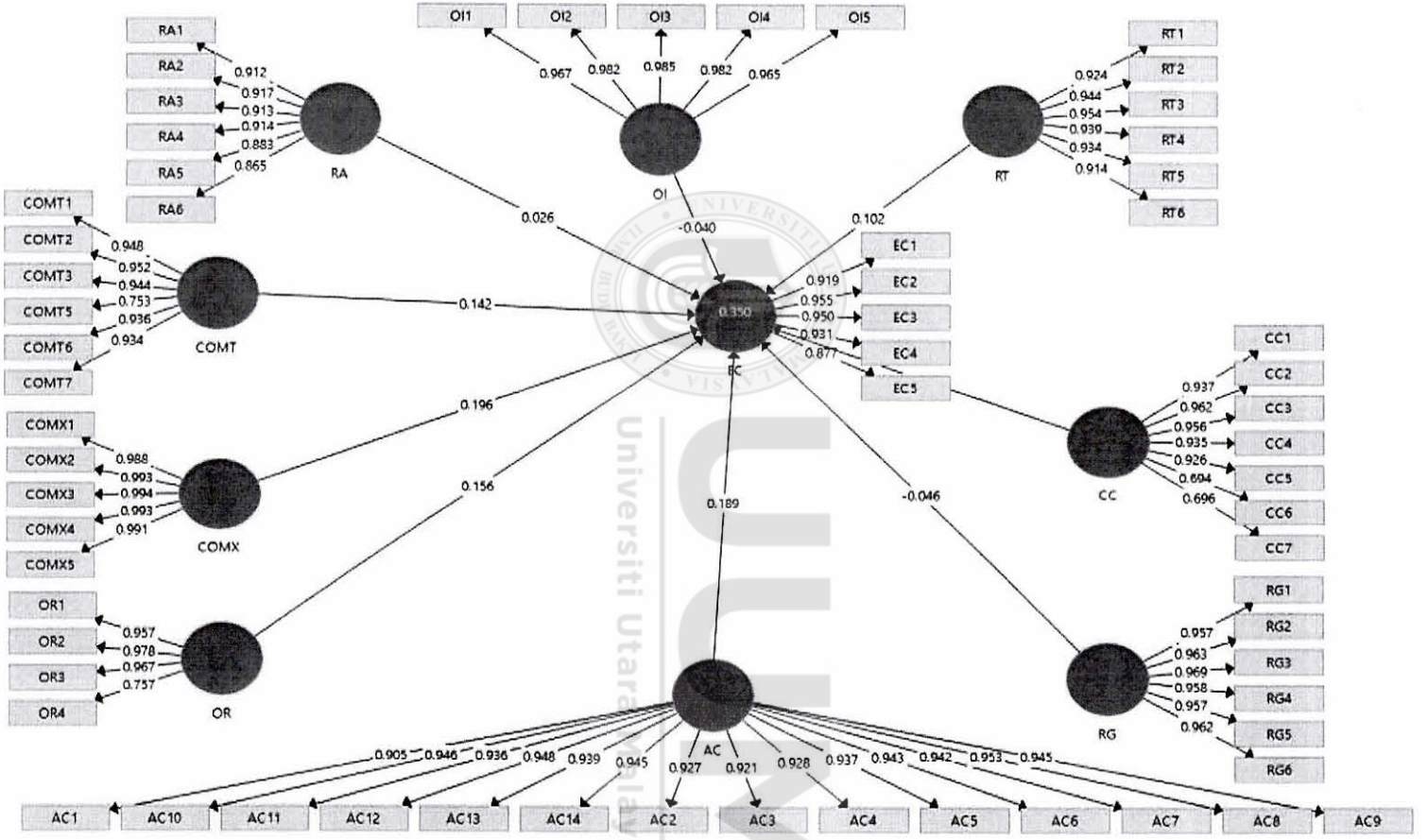
PLS-SEM is to explain the endogenous latent variables' variance, R-Square is the most important criteria to assess the structure model. The judgment of R^2 value is highly dependent on the specific research discipline (Davcik, 2014; Hair et al., 2014; Hair et

al., 2011). R-Square (R^2) is also known as the coefficient of determination (Hair et al., 2011; Henseler et al., 2009). The R-squared value symbolizes the proportion of variation in the criterion variable(s) that can be clarified by one or more predictor variable (Elliott & Woodward, 2007; Hair et al., 2011; Sarstedt et al., 2014). Depending on the framework and the context of the research, the acceptance values of R^2 varies (Hair et al., 2011). Falk and Miller (1992), in the social Science context however, recommend that 0.10 is the lowest acceptable values of R^2. Meanwhile, according to Chin (1998), 0.67, 0.33 and 0.19 are classified as substantial, moderate and weak level of R^2 respectively.

Figure 4.1 display a PLS Path Model Estimation that includes the outer loading for all items for this model, path coefficient and the coefficient of determination R^2. As shown in the Figure 4.1, the R^2 value of the endogenous latent variable (diffusion) is 35 %, that falls between the substantial and moderate, as by Chin (1998).

4.6.2.3. Structural Model Path Coefficients Assessment

The current study used PLS bootstrapping procedure draws 293 cases and 500 samples for hypotheses testing by path coefficient (β), and t-value are used for decisions on either to support or not support the hypothesis testing (Hair et al., 2014; Hair et al., 2011; Henseler et al., 2009). Path coefficient can be interpreted as standardized beta coefficients of ordinary least squares regressions.



Note: AC-Absorptive Capacity; CC-Civil Conflict; COMT-Compatibility; COMX-Complexity; EC-E-commerce adoption; OI-Organization innovativeness; OR-Organization Radiance; RA-Relative Advantage; RG-Role of the Government; RT-Relational Trust

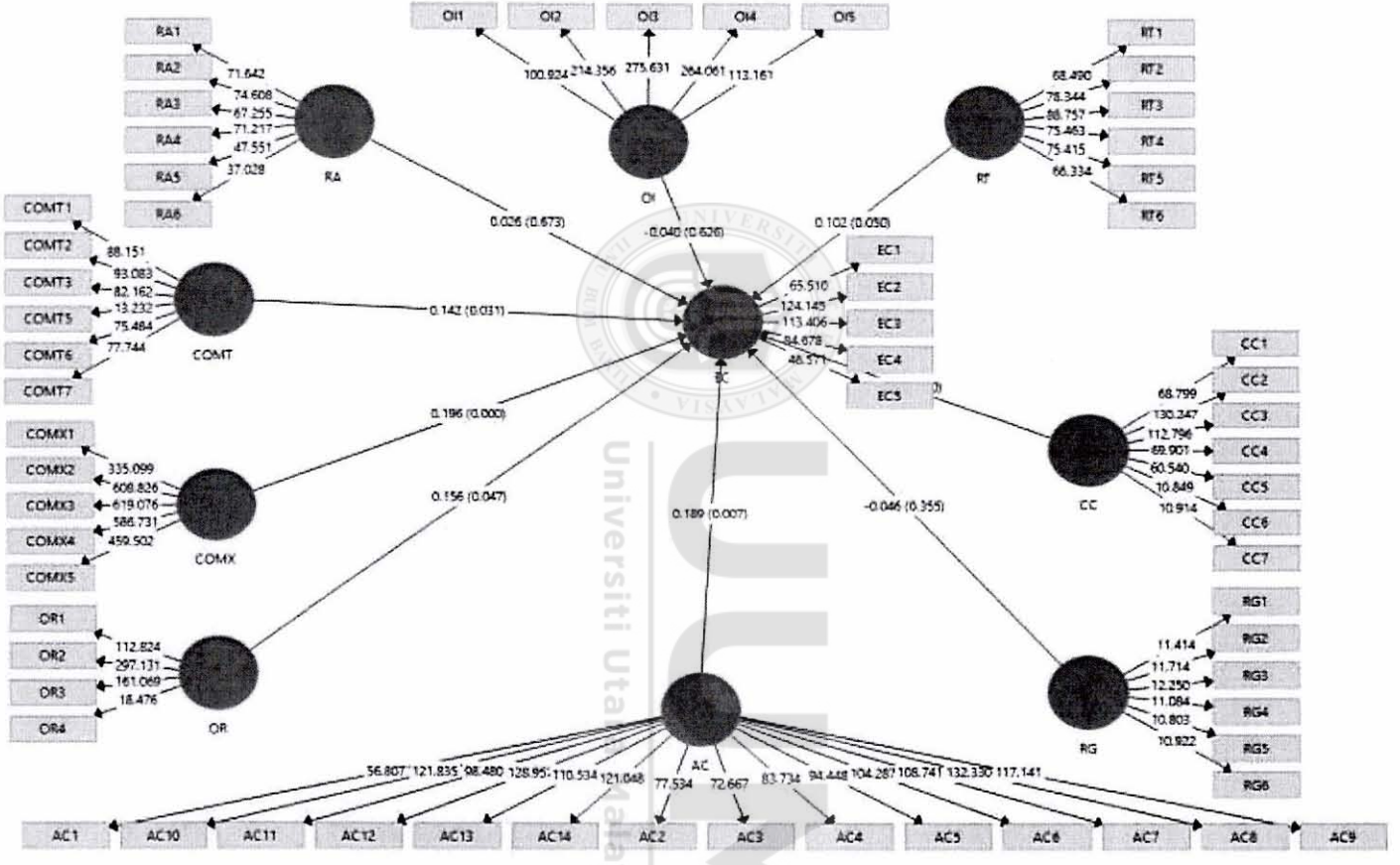
Figure 4. 1
PLS Path Model Estimation Diagram

Values of Path coefficient are standardized on a range from – 1 + 1. When coefficients are closer to + 1, it represents strong positive relationships. On the other hand, when coefficients are closer to -1, it indicates strong negative relationships (Hair et al., 2014; Hair et al., 2011; Henseler et al., 2009). Figure 4.2 exhibits a path coefficient values and p-values for the model. Clearly only three direct path that show p-value result more than 0.05 thus indicating the direct path is not significant. Also, details of path coefficient is presented in the Table 4.13. The most commonly critical values used to identify the significant level of t-vales for two tails are 1.65 (significance level = 10%), 1.96 (significance level = 5%), and 2.57 (significance level = 1%) (Ramayah, 2014).

Table 4.10 presents the summary of hypothesis testing for direct effect from TOE variables to the E-commerce adoption. The result shows five hypotheses that are significant and three hypothesis that are not significant. For the technological variables, the result indicates that relative advantage (β=0.026, t=0.422, p=0.673) appears insignificant to the relationship with E-commerce adoption. Hence, H1 is not supported. However, compatibility (β=0.142, t=2.164, p=0.031) and complexity (β=0.196, t=3.929, p=0.000) provide significant relationship with the adoption of E-commerce. Therefore H2 and H3 are supported.

Moreover, for the organizational context, the result indicates that organizational innovativeness (β=-0.040, t=0.487, p=0.626) indicates insignificant to the relationship with E-commerce adoption. Hence, H5 is not supported. However, organizational readiness (β=0.156, t=1.985, p=0.047) and absorptive capacity (β=0.189, t=2.710, p=0.007) provide significant relationship with the adoption of E-commerce. Therefore H4 and H6 are supported.

Furthermore, for the environmental context, the result indicates that role of government (β=-0.046, t=0.925, p=0.355) indicates insignificant to the relationship with E-commerce adoption. Hence, H7 is not supported. However, relational trust (β=0.102, t=1.962, p=0.050) exhibits significant relationship with the adoption of E-commerce. Therefore H8 is supported.



Note: AC-Absorptive Capacity; CC-Civil Conflict; COMT-Compatibility; COMX-Complexity; EC-E-commerce adoption; OI-Organization innovativeness; OR-Organization Radiance; RA-Relative Advantage; RG-Role of the Government; RT-Relational Trust

Figure 4. 2
PLS Structural Model Path Coefficient and p-Values

Table 4. 10
Significance Testing Results of the Structural Model Path Coefficient

Hypothesis	Relationship	Path Coefficients	*t* Value	*p* Value	Decision
H1	RA → EC	0.026	0.422	0.673	Not Supported
H2	**COMT → EC**	**0.142**	**2.164**	**0.031**	**Supported**
H3	**COMX→ EC**	**0.196**	**3.929**	**0.000**	**Supported**
H4	**OR → EC**	**0.156**	**1.985**	**0.047**	**Supported**
H5	OI → EC	-0.040	0.487	0.626	Not Supported
H6	**AC → EC**	**0.189**	**2.710**	**0.007**	**Supported**
H7	RG → EC	-0.046	0.925	0.355	Not Supported
H8	**RT → EC**	**0.102**	**1.962**	**0.050**	**Supported**

*Note: AC-Absorptive Capacity; CC-Civil Conflict; COMT-Compatibility; COMX-Complexity; EC-E-commerce adoption; OI-Organization innovativeness; OR-Organization Readiness; RA-Relative Advantage; RG-Role of the Government; RT-Relational Trust.

4.6.2.4. Predictive Relevance (Q^2) Assessment

Predictive sample Stone-Geyser's (Q^2) technique can be applied as a criterion for predictive relevance besides looking at the magnitude of the R^2. This study used the blindfolding procedure. It can be seen that this model has good predictive relevance for all of the endogenous variables. In order for the model to have a predictive relevance, the Q^2 values must be more than 0 (Henseler et al., 2009). The results depicted in table 4.12 show the Q^2 of E-commerce adoption (CV Red = 0.306) signifies that the research model has good predictive relevance.

4.6.2.5. Assessment of Effect Sizes f^2 and q^2

Previous research are advised to perform the assessment of effect size for coefficient of determination R^2 using f^2 and effect size for predictive relevance Q^2 using q^2 (Hair et

al., 2014). The effect sizes f^2 will explain how much the TOE and moderator variables effect the exogenous variable, E-commerce adoption, and while the effect sizes q^2 will how strong the TOE and moderator variables effect the exogenous variable, E-commerce adoption .As for that, this study present the analysis for effect sizes, effect sizes f^2 and effect sizes q^2.

Effect size f^2 specifies the qualified effect of a particular exogenous latent variable on endogenous latent variable(s) by means of changes in the R^2. It calculates as the boost in R^2 of the latent variable connected to the path, relative to the latent variable's proportion of unexplained variance (Chin, 1998). Thus the effect size could be expressed using the following formula (Cohen, 1988). $\boldsymbol{f^2} = (R^2_{\text{include}} - R^2_{\text{exclude}})/1 - R^2_{\text{include}})$. The $\boldsymbol{f^2}$ values 0.02, 0.15, and 0.35 signify small, medium, and large effects, respectively (Cohen, 1988; Hair et al., 2014).

The summary result presented in the Table 4.11 indicated that for technological variables, compatibility and complexity give a small effect for coefficient of determination to the E-commerce adoption. However, for relative advantage, this variable has no effect for coefficient of determination to the adoption of the E-commerce. As for the organizational variables, organizational innovativeness has no effect on for coefficient of determination to the E-commerce adoption, while organizational readiness and absorptive capacity reported to have a small effect for coefficient of determination to the adoption of E-commerce. Subsequently, role of government has no effect on for coefficient of determination to the E-commerce adoption, while relational trust reported has a small effect for coefficient of determination to the adoption of E-commerce. Finally, the moderator variable, civil

conflict shows a small effect predictive relevance to the endogenous variable, E-commerce adoption.

Table 4. 11
Results of Effect Sizes f^2

Exogenous Variable	R^2_{incl}	R^2_{excl}	f^2	Decision
Relative Advantage	0.356	0.356	0.000	No effect
Compatibility	0.356	0.339	0.026	Small
Complexity	0.356	0.322	0.051	Small
Organization Readiness	0.356	0.348	0.012	Small
Organization innovativeness	0.356	0.355	0.002	No effect
Absorptive Capacity	0.356	0.341	0.023	Small
Role of the Government	0.356	0.354	0.003	No effect
Relational Trust	0.356	0.349	0.011	Small
Civil Conflict	0.356	0.331	0.038	Small

It is to follow the same method for effect size for predictive relevance Q^2, q^2 refer to the observation of changes in predictive relevance Q^2 value after an exogenous variable omitted from the model (Hair et al., 2014). This value will be translated as small (0.02), medium (0.15) and large (0.35) (Hair et al., 2014). The value of q^2 was calculated based on the following equation, $\boldsymbol{q^2} = (Q^2_{include} - Q^2_{exclude})/1 - Q^2_{include})$, the summary of the results is presented in the Table 4.12

Table 4. 12
Results of Effect Sizes q^2

Exogenous Variable	Q^2_{incl}	Q^2_{excl}	q^2	Decision
Relative Advantage	0.306	0.306	0.000	No effect
Compatibility	0.306	0.292	0.020	Small
Complexity	0.306	0.265	0.059	Small
Organizational Readiness	0.306	0.299	0.010	Small
Organization innovativeness	0.306	0.306	0.000	No effect
Absorptive Capacity	0.306	0.294	0.017	Small
Role of the Government	0.306	0.304	0.003	No effect
Relational Trust	0.306	0.300	0.009	No effect
Civil Conflict	0.306	0.285	0.030	Small

The summary result presented in the Table 4.12 indicated that for technological variables, compatibility and complexity give a small effect of predictive relevance to the E-commerce adoption. However, for relative advantage, this variable has no effect predictive relevance to the adoption of the E-commerce. As for the organizational variables, organizational innovativeness has no effect on predictive relevance to the E-commerce adoption, while organizational readiness and absorptive capacity reported to have a small effect predictive relevance to the adoption of E-commerce. Subsequently, both environmental variables (role of government and relational trust) have no effects on the E-commerce adoption. Finally, the moderator variable, civil conflict shows a small effect predictive relevance to the endogenous variable, E-commerce adoption.

4.6.3. Testing Moderating Effect

Baron and Kenny (1986) Explain moderator as, "a qualitative or quantitative variable that affects the direction and/or strength of a relation between independent or predictor and a dependent or criterion variable. Moderator variables are typically introduced when there is an unexpectedly weak or inconsistent relation between a predictor and a

criterion variable". In other words moderation takes place when the effect of a predictor on a criterion varies depending on the level of a third variable, called a moderator variable, which interacts with the independent variable in order to explain the dependent variable (Baron & Kenny, 1986). To incorporate interaction effect into path model, PLS requires the interaction term to be modeled as an additional latent variable called "interaction latent construct". Initiating such construct in PLS can be done by including product indicator approach (Hair et al., 2014; Hair et al., 2011; Henseler et al., 2009). In product indicator approach, the interaction effect is modeled by creating a latent interaction construct in which its indicators are estimated by multiplying each predictor's indicator with each moderator's indicator (Chin & Dibbern, 2010; Hair et al., 2014; Henseler & Chin, 2010).

In this study, the civil conflict has been proposed as a moderator on all hypothesized relationships specified in the path model. The interaction latent constructs related to civil conflict have been constructed using product indicators approach. Thus, this study has eight interaction latent constructs which were examined using bootstrapping procedure with 500 resample. Therefore, when the magnitude of the resulting empirical t-value is above 1.96, it can be suggested that the path coefficient is significantly different from zero at a significance level of 5%. The critical t values for significance levels of 1 % and 10% probability of error are 2.57 and 1.65, respectively (Ramayah, 2014).

There were eight hypotheses tested for moderation effects. Table 4.13 indicates that only two hypotheses that are significant and six hypotheses that are not significant when

civil conflict were tested as the moderator between predicted variables to the E-commerce adoption.

Table 4. 13
Interaction Path Coefficients and Significant

Hypothesis	Interaction effect	*β*	*t* Values	*p* Values	Decision
H9a	**CC*RA → EC**	**0.169**	**2.199**	**0.028**	**Supported**
H9b	CC*COMT → EC	-0.013	0.182	0.856	Not Supported
H9c	CC*COMX → EC	0.051	0.854	0.394	Not Supported
H9d	CC*OR → EC	0.086	0.888	0.375	Not Supported
H9e	CC*OI → EC	-0.042	0.434	0.664	Not Supported
H9f	CC*AC → EC	0.065	0.875	0.382	Not Supported
H9g	**CC*RG → EC**	**-0.117**	**2.302**	**0.022**	**Supported**
H9h	CC*RT → EC	0.019	0.367	0.714	Not Supported

*Note: AC-Absorptive Capacity; CC-Civil Conflict; COMT-Compatibility; COMX-Complexity; EC-E-commerce adoption; OI-Organization innovativeness; OR-Organization Readiness; RA-Relative Advantage; RG-Role of the Government; RT-Relational Trust.

From Table 4.13, the result shows six hypotheses that are not significant. For the technological variables, civil conflict does not moderate the relationship between compatibility and complexity with the adoption of E-commerce. The interaction between compatibility and civil conflict is not significant (β=-0.013, t=0.182, p=0.856) with the adoption of technology, hence H9b is not supported. Also, the interaction between complexity and civil conflict is not significant (β=0.051, t=0.854, p=0.394) with the adoption of technology, hence H9c is not supported.

Moreover, for the organizational context, all variables (organizational readiness, organization innovativeness and absorptive capacity) are not significant to the adoption of E-commerce. The interaction between organizational readiness and civil conflict is

not significant (β=0.086, t=0.888, p=0.375) with the adoption of technology, hence H9d is not supported. Similarly, the interaction result between civil conflict and organizational innovativeness reports as not significant (β=-0.042, t=0.434, p=0.664) with the adoption of technology, hence H9e is not supported. Also, the interaction finding between civil conflict and absorptive capacity appears insignificant (β=0.065, t=0.875, p=0.382) with the adoption of technology, hence H9f is not supported. The last insignificant result for the moderating test is the interaction between civil conflict and environmental variable, relational trust (β=0.019, t=0.367, p=0.714) to the adoption of E-commerce.

Meanwhile, there is a significant moderating role of civil conflict between relative advantage and role of government to the E-commerce adoption. Figure 4.3 plotted the the interaction pattern for hypothesis H9a. The pattern in Figure 4.3 shows that in the low civil conflict environment, the adoption of E-commerce is higher when relative advantage is low. However when civil conflict situation more intense, perceived benefits of E-commerce is more appreciated. This situation explains the H9a where civil conflict moderates positively the relationship between relative advantage and E-commerce adoption.

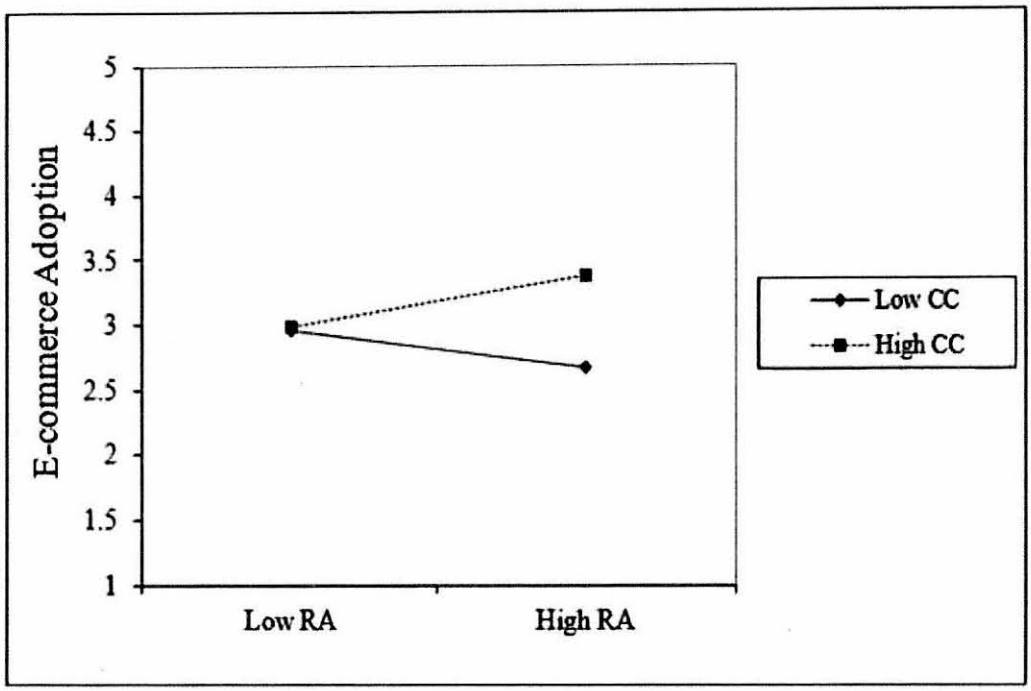


Figure 4. 3
The Interaction Effect between Relative Advantage (RA) and Civil Conflict (CC)

On the contrary, the interaction between Role of the Government and civil conflict in this study is negative and significant (β=-0.117, t=2.302 p< 0.05) to the adoption of E-commerce, hence H9g is supported. Figure 4.4 plotted the interaction pattern for hypothesis H9g. The pattern in Figure 4.4 exhibits that in the less intense civil conflict environment, the adoption of E-commerce is higher when the role of government also high. However when civil conflict situation more intense, the role of government is lower because the security and accessibility to the affected area. Also the E-commerce adoption in the higher intense level conflict is lower than in the less intense situation, because people afraid to get out for outdoor activities. This situation explains the H9g where civil conflict moderates negatively the relationship between role of government and E-commerce adoption.

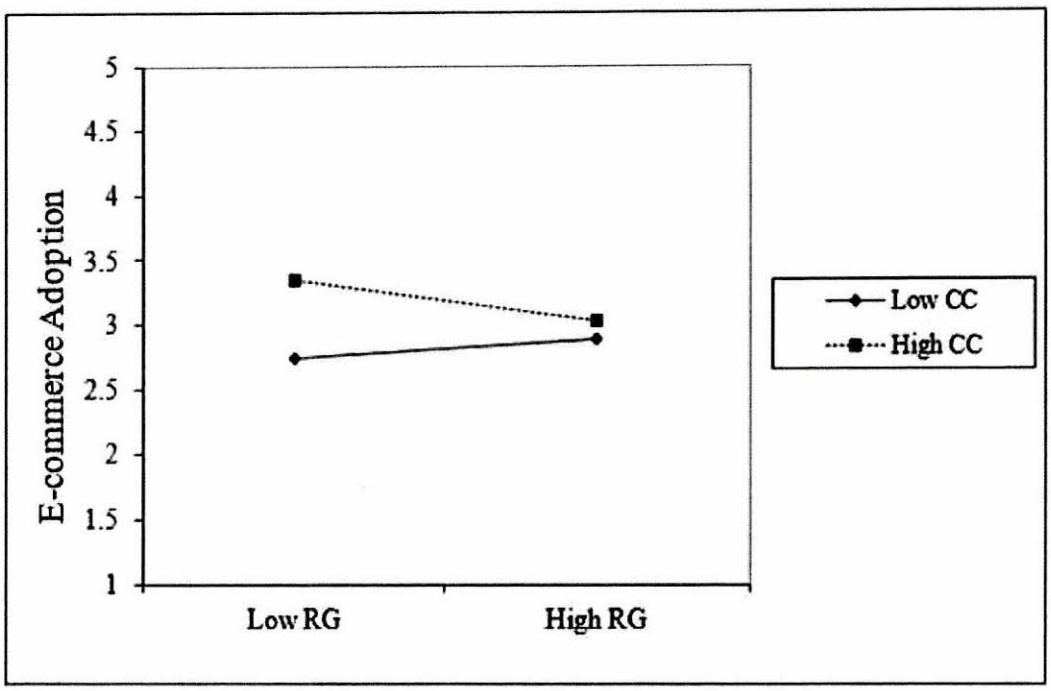


Figure 4. 4
The Interaction Effect between Role of the Government (RG) and Civil Conflict (CC)

4.6.4. Summary of Testing Hypotheses

Table 4.14 presents a summary of the results. Two types of testing were applied to answer the research objectives. The first three objectives (RO1 to RO3) were tested using direct effect relationship on eight hypotheses. The finding indicated that five of the hypotheses show significant relationship with the adoption of E-commerce. Secondly to answer another three research objectives (RO4 to RO6) using interaction testing (moderator) using eight hypotheses tested. The finding reveals that only two of these hypotheses were significant. The summary of hypotheses result exhibits in Table 4.14.

Table 4. 14
Summary of Hypotheses Testing

Hypothesis	Hypothesis statement	Sign (+/-)	Sign	Decision
Direct Effect				
H1	There is a significant relationship between the relative advantage and the E-commerce adoption	+	Ns	Not Supported
H2	There is a significant relationship between the Compatibility and the E-commerce adoption	+	Sign	Supported
H3	There is a significant relationship between the Complexity and the E-commerce adoption.	+	Sign	Supported
H4	There is a significant relationship between the Organizational readiness and the E-commerce adoption.	+	Sign	Supported
H5	There is a significant relationship between the Organizational innovativeness and the E-commerce adoption.	-	Ns	Not Supported
H6	There is a significant relationship between the absorptive capacity and the E-commerce adoption.	+	Sign	Supported
H7	There is a significant relationship between the Role of Government and the E-commerce adoption.	-	Ns	Not Supported
H8	There is a significant relationship between the Relational Trust and the E-commerce adoption.	+	Sign	Supported
Interaction Effect				
H9a	Civil conflict moderates the relationship between the relative advantages and the E-commerce adoption.	+	Sign	Supported
H9b	Civil conflict moderates the relationship between the compatibility and the E-commerce adoption.	-	Ns	Not Supported
H9c	Civil conflict moderates the relationship between the complexity and the E-commerce adoption.	+	Ns	Not Supported
H9d	Civil conflict moderates the relationship between the Organizational Readiness and the E-commerce adoption.	+	Ns	Not Supported

*Sign: significant, Ns: not significant, (+) positive relationship, (-) negative relationship

continue

Table 4. 14 (Continued)
Summary of Hypotheses Testing

Hypothesis	Hypothesis statement	Sign (+/-)	Sign	Decision
Interaction Effect				
H9e	Civil conflict moderates the relationship between the Organizational Innovativeness and the E-commerce adoption.	-	Ns	Not Supported
H9f	Civil conflict moderates the relationship between the Absorptive Capacity and the E-commerce adoption.	+	Ns	Not Supported
H9g	Civil conflict moderates the relationship between the Role of Government and the E-commerce adoption.	-	**Sign**	**Supported**
H9h	Civil conflict moderates the relationship between the Relational Trust and the E-commerce adoption.	+	**Ns**	Not Supported

4.7. Summary of the Chapter

This chapter covers the data analysis and finding of this study. It starts with data screening and preliminary analysis including missing value analysis, assessment of outliers, and normality. Later, the research presents the profile of responding firms and respondents of this study. In order to answer the research objectives of this study, data were analyzed using SmartPLS version 3.0. The research framework tested achieved its validity and reliability. Later, 16 hypotheses for this study were tested. The finding indicated that five out of eight hypotheses of direct effect testing show significant relationship with the adoption of E-commerce. As for interaction testing (moderator), the result shows that two out of eight hypotheses test were significant to the E-commerce adoption. The discussions, research implications, limitations, suggestions for future research will be presented in Chapter 5.

CHAPTER FIVE
DISCUSSIONS AND CONCLUSION

5.1. Overview of the Chapter

This final chapter presents the discussions of the related findings and interprets the figures from statistical analysis into descriptive statements regarding the relationships between technology, organizational, and environmental factors and E-commerce adoption among SMEs in Iraq. In addition, discussion will include the moderating effects of civil conflict on the influence of the determinants on E-commerce adoption among Iraqi SMEs. This chapter is divided into five sections. It starts with the recapitulation of this study in Section 5.2. Then, Section 5.3 discusses the findings of determinant factors. After this, followed by the implications of the study from both theoretical and practical perspectives are also explained in detail are provided in Section 5.4. Finally, the limitations and recommendations for future research as well as the overall conclusions are discussed in Sections 5.5 and 5.6.

5.2. Synopsis of study

As reiterated in the prior chapters, the main aim behind this study is on the relationship among technology, organizational, environmental contexts and E-commerce adoption among SMEs in Iraq. It also determined the moderating effect of civil conflict on technology, organizational, environmental contexts and E-commerce adoption relationship. One of the objectives was to investigate the relationship between the technological contexts with the E-commerce adoption. The other objective was to

determine the relationship between organizational contexts and the E-commerce adoption. In addition, this study also attempted to discover relationships between the environmental contexts and the E-commerce adoption among SMEs in Iraq. Finally, the last objective of this study was to identify possible effect of moderator variable civil conflict on the relationship between on technology, organizational, environmental contexts with E-commerce adoption relationship.

Accordingly, this study has developed a theoretical framework grounded on the DOI and RDT theories and TOE model. The variables used in this study were grouped into technological, organizational, and environmental factors. Relative Advantage, Compatibility, and Complexity are the technological factors that determine the degree of E-commerce suitability to a potential adopting entity. Meanwhile, Organization Readiness, Organization innovativeness, and absorptive capacity are organizational factors that reflect firms' ability to adopt E-commerce. In addition, the role of government and relational trust are considered as an environmental of the SME organization also impacts some challenges to E-commerce adoption. Finally, this study looks into the moderating effect of civil conflict on the relationships between technological, organizational, and environmental factors and adopt of E-commerce.

This study used a sample from the SMEs in Central Statistical Center directory, Ministry of Planning in Iraqi Kurdistan (Erbil province, Sulaimaniya province, Duhok province). The unit of analysis was organization with key manager and owners as respondent to the questionnaires using through personal contacts, in addition to the use of email. A total of 520 questionnaires were distributed with required sample of 393.

The respond rate was 81.16% of the sample size. However, after screening, only 293 questionnaires were valid for further analysis.

All variables employed in this study have been validated to ensure their validity and reliability. The result shows satisfactory level of reliability and validity to perform further analysis. This study PLS-SEM approach to examine the specified relationship between research variables and the moderation effects related to Civil Conflict. The results have shown that the effects of Compatibility, Complexity, Organization Readiness, Absorptive Capacity, and Relational Trust were supported while Relative Advantage, Organization innovativeness, and Role of the Government were not. On the other hand, the moderation effect of Civil Conflict is partially supported. Next section discusses the results in more details.

5.3. The Findings of Determinant Factors

This section discusses the results of the hypothesis-testing presented in the previous chapter. The present study examines the relationship of 9 determinant factors and E-commerce adoption. The determinant factors are based on their characteristics which are classified into four contexts. Thus, this section will discuss more details of each context within its factors.

5.3.1. Research Objective 1

5.3.1.1. The Relationship between Relative Advantage and E-commerce Adoption

Hypothesis (1): There is a significant relationship between the relative advantage and the E-commerce adoption.

The result for this study revealed that relative advantage has no significant relationship with E-commerce adoption. Furthermore, the bootstrapping of 500 procedure reported that there is no effect size for coefficient of determination, r^2. For this study, relative advantage appears to be insignificant to the adoption of E-commerce which indicates that firm's do not perceived any benefits from the adoption of E-commerce environment. Hence H1 is not supported.

According to Tornatzky and Klein (1982) and Rogers (2003), relative advantage is conceded to be the most reliable, significant reasons for innovation adoption. Conversely, the findings in this study suggest that firms that were adopting the E-commerce were not witnessing tangible and significant advantages from E-commerce technology. The insignificant impact of relative advantage on e-commerce adoption could be attributed to Iraqi SMEs minimal e-commerce adoption. The results showed 201 firms (78.8%) belongs to level '1', of E-commerce adoption, making it difficult for managers and owner SMEs to perceive its practical advantages. Also, the reason for this insignificant result given a choice, firms prefer to conduct the their business traditionally as compared to online transcations. This result is consistent with Teo and Pian (2003) who did not find a significant relationship between internet adoption and the relative advantage factor, which suggested that adopters were not witnessing

significant advantages from the Internet. Nevertheless, several empirical works have produced similar results (Awiagah et al., 2015; Chee et al., 2016; Jahongir & Shin, 2014; Wang et al., 2016; Yoon & George, 2013). Another reason is benefits such as increased sales, improved customer services, reduced inventory and procurement costs, improved coordination with suppliers, and increased employee productivity, might be perceived with different end result by every firm (Almoawi & Mahmood, 2012), whereby some may consider it to be important and some may not.

5.3.1.2. The Relationship between Compatibility and E-commerce Adoption

Second research hypothesis is the relationship between technology compatibility and E-commerce adoption.

Hypothesis (2): There is a significant relationship between the compatibility and the E-commerce adoption.

The result for this study revealed that compatibility has significant relationship with E-commerce adoption. Furthermore, the bootstrapping of 500 procedure reported that there is small effect size for coefficient of determination, r^2. For this study, compatibility appears to be significant to the adoption of E-commerce which indicates that owners believe their firm is compatible with the adoption of E-commerce. Hence H2 is supported.

The result from this study indicates that currenty, the technology that is available to at their organization supports the adoption of E-commerce. This situation can be explained by the demographic factors, where majority of the owners' age are between 30 to 39 years old and their eduation level are degree. These factors confirms that those

groups of owners belong to the Y Generation that is familiar and easily adaptable with the new technology. This finding support the suggestion made by prior research that claimed compatibility is an important factor to be considered before SMEs can adopt E-commerce (Rajaguru & Matanda, 2013; Venkatesh & Bala, 2012). Furthermore, compatibility is another technological context. The current study results show that compatibility has a significant and positive effect on adoption of E-commerce. This means that compatibility of the E-commerce with the way operate of firms, working style of firms, and with business strategy of firms is important variable in the adoption of E-commerce among Iraqi SMEs. This result is in line with prior researchers (Abadi et al., 2013; Ahmad et al., 2014; Al-Qirim, 2007; Ghobakhloo et al., 2011; Hung et al., 2011; Kurnia, Karnali, et al., 2015; Shah Alam et al., 2011) who conducted studies of E-commerce adoption among SMEs. This finding is in accordance with DOI's prediction, which predicts that a greater fit and consistency between existing operating environment and the adoption of E-commerce increase the degree of achieving successful diffusion of E-commerce by way of reducing the modification and resistant effort (Rajaguru & Matanda, 2013; Venkatesh & Bala, 2012).

In addition, the findings of the current study confirmed previous studies that indicated the compatibility is dependent on the innovation adoption among SMEs that require minimal changes within their firms, their values culture, working processes, and infrastructure; then, it is more likely for SMEs to adopt the new technology (Alshamaila et al., 2013; Boumediene Ramdani et al., 2013; Venkatesh & Bala, 2012; Wang et al., 2016). This suggests that firms in Iraq viewed E-commerce as compatible with their business environment, existing values, practices and information technology infrastructure.

5.3.1.3. The Relationship between Complexity and E-commerce Adoption

The SMEs express hesitation to adopt E-commerce if the technology is difficult to be understood, installed, learnt and used. Therefore, the easier it is to understand the technology, the faster and more immediately the adoption will take place and vice versa. This leads to the following hypothesis:

Hypothesis (3): There is a significant relationship between the complexity and the E-commerce adoption.

The result for this study revealed that complexity has significant relationship with E-commerce adoption. Furthermore, the bootstrapping of 500 procedure reported that there is small effect size for coefficient of determination, r^2. For this study, complexity appears to be significant to the adoption of E-commerce which indicates that owners believe their firm face complexity to adopt E-commerce. Hence H3 is supported.

The results of the data analysis indicated that perceived complexity is found to have a significant and positive relationship with firms' intention to adopt E-commerce. This result shows that firms believe that the complexity of adopting the E-commerce influence the decision to adopt. If E-commerce is very complex to understand, therefore the adoption of the technology also reducing. This result is consistent with the prior studies (Cao et al., 2013; Gangwar et al., 2015; Boumediene Ramdani et al., 2013; Tarofder et al., 2013), which indicate that raising perceived Complexity of E-commerce adoption erodes the firm's intention to adopt. The result of this study entails that as E-commerce is perceived as being difficult to use, the lower the intention of the firm to adopt is expected. However, this result is not in line with prior researchers (Ahmad et

al., 2014; Almoawi & Mahmood, 2012; Ifinedo, 2011; Picoto et al., 2014) who conducted studies of E-commerce adoption among SMEs.

A higher level of Complexity limits the firm's ability to easily integrate E-commerce within its activities. This, in turn, increases the level of risk perceived in the adoption (Ramdani et al., 2009). The result of this study, also confirms the wide beliefs that owners or managers of SMEs express hesitation to adopt E-commerce, if the technology is difficult to understand, install, learn and use. Therefore, the easier to understand the technology, the faster and more immediately the adoption will take place and vice versa. In summary, Complexity of E-commerce constrains adoption, through the uncertainty resulting from a lack of understanding regarding the commerce clause ambiguity. Due to this uncertainty, potential adopters will be likely to abstain from adopting E-commerce.

5.3.2. Research Objective 2

The Organizational Context contains three determinant factors: Organization Readiness, Organization Innovativeness, and Absorptive Capacity. In general, the Organizational Context has focused on three hypotheses that are discussed in the next section.

5.3.2.1. The Relationship between Organizational Readiness and E-commerce Adoption

In order to adopt E-commerce in an appropriate manner, it is essential for the organization to ensure that there is an alignment between the technological change in organization and organizational capability, including financial resources and human

resources (McElheran, 2015; Tarofder et al., 2013). This leads to the following hypothesis:

Hypothesis (4): There is a significant relationship between the Organizational Readiness and the E-commerce adoption.

The result for the study revealed that organizational readiness has significant relationship with E-commerce adoption. Furthermore, the bootstrapping of 500 procedures reported that there is a small effect size for coefficient of determination, r^2. For this study, organizational readiness appears to be significant to the adoption of E-commerce which indicates that owners believe that their firm is ready to adopt E-commerce in their business operation. Hence H4 is supported.

The finding of this study indicates that firms believe their organizations are rady to adopt the E-commerce. The result also explained by the demographic factors of respondents that belong to the Y Generation, where this generation is easily adaptable with the technology. Furthermore, adopting the E-commerce now is not costly like before. Even some of the business activites can be conducted with minimal cost with the help of social software such as Facebook.

The results of the data analysis provided support for this hypothesis to adopt E-commerce among Iraqi SMEs. In addition, the factor of Organizational Readiness was one of the most determinants of E-commerce adoption in Iraqi SMEs. Moreover, it had positive and significant with E-commerce adoption. The present finding is in accordance with the prior studies (Chee et al., 2016; Boumediene Ramdani et al., 2013) which reported positive link between Organizational Readiness and firm's intention to

adopt E-commerce. Those studies have concluded that organization readiness as manifested by the widespread use of IT, by a good understanding of how E-commerce can be used in business of firms and the availability of financial readiness would speed up the adoption process. In other words, the important and significant role of Organizational Readiness on intention to adopt is contingent on the firm willingness to overcome its rigidities and to mobilize its resources towards new innovation adoption.

5.3.2.2. The Relationship between Organizational Innovativeness and E-commerce Adoption

Hypothesis (5): There is a significant relationship between the Organizational Innovativeness and the E-commerce adoption.

The result for this study revealed that organizational innovativeness has no significant relationship with E-commerce adoption. Furthermore, the bootstrapping of 500 procedure reported that the there is no effect size for coefficient of determination, r^2. For this study, organizational innovativeness appears to be insignificant to the adoption of E-commerce which indicates that firms do not perceived that innovativeness has relationship with the adoption of E-commerce environment. Hence H5 is not supported.

The results of the analysis did not support this hypothesis to adopt E-commerce among Iraqi SMEs. In addition, it was an insignificant predictor and negative relationship. This result is not in line with previous studies that depict organizational innovation as a capability that positively influences other capabilities (e.g., collaboration, technology, and learning) as well as performance. However, the result is in line with the study in Taiwan by Lin (2006) who found the innovativeness is not statistically significant with

the E-commerce adoption among SMEs, where the result of this study was not able to explain significant variance in organizational innovativeness, suggesting that owners or managers in sample of this study were at odds about the terms of organizational innovativeness as an aspect of organizational culture. The firms which are cultures less open to new inventions and not ready to seek or accept innovation are not ready to accept and adopt new technology (McKinnie, 2016). Messerschmidt and Hinz (2013) found that both organizational and individual innovativeness enhance adoption intents, ascribing more weight to personal innovativeness. The lack of organizational innovativeness may be indicative of the SMEs appetite for external innovation (McKinnie, 2016). The organizational innovativeness is a general aspect of a firm's culture and is not associated with any specific innovations that may be pertinent in adopting of E-commerce (Venkatesh & Bala, 2012). Moreover, the TOE framework is consistent with the DOI theory, emphasized individual characteristics, and both the internal and external characteristics of the firm, as drivers for organizational innovativeness (Taylor, 2015).

5.3.2.3. The Relationship between Absorptive Capacity and E-commerce Adoption

Hypothesis (6): There is a significant relationship between the Absorptive Capacity and the E-commerce adoption.

The result for the study revealed that absorptive capacity has significant relationship with E-commerce adoption. Furthermore, the bootstrapping of 500 procedures reported that there is small effect size for coefficient of determination, r^2. For this study, absorptive capacity appears to be significant to the adoption of E-commerce which

indicates that owners believe their firm has the ability to adapt themselves to adopt E-commerce. Hence H6 is supported.

The findings of this study come up with the significantly positive relationship between Absorptive Capacity and the E-commerce adoption. The results of the analysis provided support for this hypothesis to adopt E-commerce among Iraqi SMEs. In addition, among all independent variables in organization context, the variable of Absorptive Capacity was one of the biggest determinants of E-commerce adoption in Iraqi SMEs. Thus, higher levels of Absorptive Capacity were given higher influence to E-commerce adoption.

Result of the item loading for shows that, items related with the law, assistance and training from government reported a higher loading indicating that firms are aware of the supports and activities provided for them. The more of these support they received from the government, the higher their adoption to E-commerce. Firms also believes that, they have the employess that are able to acquire knowledge related with E-commerce and also they have a postitive environment to support the adoption.

This result is in line with prior researchers (Flatten et al., 2011; Guo & Wang, 2014; Hutabarat & Pandin, 2014; Muscio, 2007) who conducted studies of Absorptive Capacity among SMEs and found that this variable have a relationship with the adoption of E-commerce in their countries. According to Denan et al. (2012) Absorptive capacity is an important factor in determining successful operational performance of SMEs, In addition, the finding of the current study confirm Hashim et al. (2015), study mentioned that Absorptive capacity has a positive and significant impact on the adoption of innovation.

In addition, there are many theoretical and empirical evidences suggesting that the SMEs ability to absorb and manage knowledge as an important factor towards successful adoption of new technology and entrepreneurial growth. However, the studies were confined to the effects of experiential and formal knowledge on the development of SME absorptive capacity and how it links to innovation and performance (Gray, 2006).

In this vein, the present study recommends that owners of SMEs in Iraq have should focus on embedding and fully utilizing employees' existing knowledge or expertise into daily activities to encourage them to share their lessons learned regarding environmental-related matters. Demonstrating and sharing that particular knowledge could benefit others by assisting them to implement new ideas or innovation activities.

5.3.3. Research Objective 3

The Environmental Context contains two determinant factors: Role of Government and Relational Trust. In general, the Environmental Context has focused on two hypotheses that are discussed in the next section.

5.3.3.1. The Relationship between Role of Government and E-commerce Adoption

The Role of Government can come in the form of facilitating policy for SME operations in the country, institutional support for providing financial and technological assistance, improving E-commerce infrastructure, and enacting favorable E-commerce laws (Scupola, 2003). This leads to the following hypothesis:

Hypothesis (7): There is a significant relationship between the Role of Government and the E-commerce adoption.

The result for this study revealed that role of government has no significant relationship with E-commerce adoption. Furthermore, the bootstrapping of 500 procedure reported that the there is no effect size for coefficient of determination, r^2. For this study, that role of government appears to be insignificant to the adoption of E-commerce which indicates that firm's do not perceived that role of government has relationship with the adoption of E-commerce environment. Hence H7 is not supported.

The result of the study reveals that the Role of Government has an insignificant effect and negative relationship on adoption E-commerce this result is in line with the several empirical studies (Chatzoglou & Chatzoudes, 2016; Ifinedo, 2011; Jahongir & Shin, 2014; Kurnia, Choudrie, et al., 2015). Even though Iraqi government provide adequate infrastructure, law and legislations, but they does not provide adequate support in encouraging SMEs to engage in E-commerce. These situation leads to Iraqi SMEs adopt high levels of E-commerce and, therefore, reduced their abilities to be competitive. Feedback from this research's participants indicated that much needs to be done by the Iraqi federal government in Baghdad with respect to promoting and stimulating E-commerce adoption among local SMEs. These researchers commented that the Iraqi government was slow to respond to its citizens' and businesses' needs with regard to E-commerce initiatives. Similarly, a report presented by the Information Technology Association of Iraq stated that "Iraq lags competitor the Middle East countries in the provision of incentives for activities that assimilate technology adoption at the firm level".

In recent studies by Zaied (2012) and Abou-Shouk et al. (2016), lack of infrastructures and legislations protecting E-commerce activities were regarded as main barriers to Iraqi SMEs adopting E-commerce. This result is consistent with Kurnia, Karnali, et al. (2015) who found that a lack of a national governmental ICT strategy; a lack of satisfactory basic infrastructures were all significant obstacles to developing countries adopting E-commerce. It would suffice to say that the view in the sampled SMEs is that the lack of government support may be inhibiting their capability to adopt E-commerce.

5.3.3.2. The Relationship between Relational Trust and E-commerce Adoption

Hypothesis (8): There is a significant relationship between the Relational Trust and the E-commerce adoption.

The result for the study revealed that relational trust has significant relationship with E-commerce adoption. Furthermore, the bootstrapping of 500 procedures reported that there is a small effect size for coefficient of determination, r^2. For this study, relational trust appears to be significant to the adoption of E-commerce which indicates that owners trust the networking among supplier in the industries to adopt E-commerce. Hence H8 is supported.

Relational trust for this study relates with the trust between firms and the external parties (business partners). The finding of this study indicated that firms enjoy their relationship with their business partners. They believe their business partners are truthful, honest, provide assistance when they need and most importantly, their business partners are able to support what these fims need. This situation is explained by Iraq being a Muslim country and most of these firm owners are Muslim. These owners

behavior were influence by the practices of Islam as a religion, as well as a way of life. Therefore, these qualities also embedded in their personalities thus providing a positive business environment.

The findings of this study show the significantly positive relationship between Relational Trust and the E-commerce adoption. The results of the analysis provided support for this hypothesis to adopt E-commerce among Iraqi SMEs. This result is in line with the several empirical studies (Hoffman & Nugent, 2015; Lai et al., 2011; Sridharan & Simatupang, 2013; Wu et al., 2014). The trust has gained more attention from the potential consumers and the mistrust is seen as one of the main hindrances in the field of E-commerce. In addition, relational trust is one of the fundamental dynamics, that offers customers elasticity to deal with an unknown, nameless, remote and unidentified seller (Bryant & Colledge, 2002; Kamari & Kamari, 2012). A thorough literature review exposes that there are two dissimilar viewpoints found with regards to the relationship between trust and new technologies. At one hand, studies (Azam, Qiang, & Sharif, 2013; Gefen et al., 2003; Gefen & Straub, 2000; Zeglat & Alzawahreh, 2012) showed significant and positive relationship between trust and new technologies. On the other hand, studies found insignificant relationship between trust and new technologies is observed (Eid, 2011; Gefen et al., 2003; Gefen & Straub, 2000). Therefore, as a high level of trust is associated with mature network between trading partners, firms in such context may have larger abilities to absorb new technologies such as E-commerce.

5.3.4. Civil Conflict as a Moderator

Very limited study found by the researcher that used civil conflict as a moderator. The researcher found two articles that tested civil conflict as moderator to the intention adopt e-government services in Iraq (Faaeq, 2014) and Afghanistan (Khan, 2010; Khan et al., 2012). However, both studies using individual as unit of analysis. Therefore the variables included in these studies posited civil conflict as moderator between individual behavior factors and e-government service.

5.3.4.1. Research Objective 4

Hypothesis (9a): Civil conflict moderates the relationship between the relative advantages and the E-commerce adoption.

Hypothesis (9b): Civil conflict moderates the relationship between the compatibility and the E-commerce adoption.

Hypothesis (9c): Civil conflict moderates the relationship between the complexity and the E-commerce adoption.

Literature of civil conflict proved that civil conflict moderated technological factors such as e-service access, e-service access quality and intention to use e-service (Khan, 2010; Khan et al., 2012). Another scholar also found that civil conflict moderated the relationship between performance expectancy and the continuance usage of e-government services (Faaeq, 2014).

The direct effect of this study shows the insignificant relationship between relative advantages and E-commerce adoption. However, the moderating testing exhibits that

civil conflict moderate the relationship between relative advantages and E-commerce adoption, where firms show low relative advantage on E-commerce adoption when civil conflict less intense. However, when the civil conflict more intense, firms shows their interest to the E-commerce adoption because it is more secure to stay inside and doing some of the business operation online rather than going out when conflict happens. This result indicates that relative advantage is moderated by civil conflict to adopt E-commerce in their business operation. Personal communication with the Head of Board Industrial Zone believed that 'the adoption of E-commerce able to develop SMEs in the conflict areas', which supporting the finding of this study (personal communication, 9th February 2017). As he mentioned in the interview, '...many business owners can do business without having to go out at least under conditions of war', indicating that in a less intense conflict situation, the firms able to perform their business transaction without any problems. However, in order to make this happen, the government must ensure that infrastructure to support this direction must be available and ready to be used. Hence, H9a is supported.

The direct effect of this study shows there is a significant relationship between compatibility and E-commerce adoption. On the other hand, the moderating testing exhibits that civil conflict did not moderate the relationship between compatibility and E-commerce adoption. The situation explains that the compatibility of firms has influence in adoption of E-commerce and the intensity of civil conflict is not affecting the decision to adopt this technology. The also found that direct effect of this study shows there is a significant relationship between complexity and E-commerce adoption. However, the moderating testing reveals that civil conflict did not moderate the relationship between complexity and E-commerce adoption. The situation explains that

the complexity perceived has influence in adoption of E-commerce and the intensity of civil conflict give no effect the decision to adopt this technology.

As for compatibility and complexity variables, these variables related with the technology of ICT available in this country is similar to what is available in the other country. Most of the younger generation is familiar with technology as compared to older generation (Almoawi & Mahmood, 2012). Furthermore, this study found that majority of the owners' feedback are between the age 30 to 39 years old and their education level are degree. These factors confirms that those groups of owners belong to the Y Generation that is familiar and easily adaptable with the new technology. The Iraq Wallet, the country's leading mobile wallet and digital payment company, for example, has announced that it has expanded its 'Zain Cash' service by introducing and launching chanbar.com, a multi-channel, cloud-based E-commerce platform to support Iraqi online entrepreneurs. Chanbar.com allows small and medium-sized businesses to launch customizable online stores within 24 hours at no charge to the businesses. The first of its kind in Iraq, this life-empowering service is available to Zain mobile customers through the mobile operator's nationwide 3.9G network (IMC, 2016). However, this study found that the technology related with ICT are complex. This situation could lead to the situation where SMEs have received financial assistance from the government but they are not able help their business to growth (personal communication, 9th February 2017). More understanding related with how to leverage the technology to improve their business must be enhanced through the appropriate training for their situation. From the above discussion, it can be seen that compatibility related with the technology available at a particular time and complexity is related the understanding perceived by the SMEs owners related the technology which may not

moderated by the existing environment like civil conflict. Hence, it is aligned with the result under H9b and H9c.

The overall discussion of this section reveals that, SMEs are ready to adopt E-commerce and have the ability acquire knowledge related with the adoption. Therefore, the policy maker needs to conduct a training need analysis in order to provide the suitable training to support this situation.

5.3.4.2. Research Objective 5

Hypothesis (9d): Civil conflict moderates the relationship between the organizational readiness and the E-commerce adoption.

Hypothesis (9e): Civil conflict moderates the relationship between the organizational innovativeness and the E-commerce adoption.

Hypothesis (9f): Civil conflict moderates the relationship between the absorptive capacity and the E-commerce adoption.

The direct effect of this study shows there is a significant relationship between organizational readiness and E-commerce adoption. On the other hand, the moderating testing exhibits that civil conflict did not moderate the relationship between organizational readiness and E-commerce adoption. The situation explains that the organizational readiness of firms has influence in adoption of E-commerce and the intensity of civil conflict is not influencing the decision to adopt this technology. This result contradict the result of previous study that reported civil conflict moderated

organizational readiness such as effort expectancy and the continuance usage of the e-government services (Faaeq, 2014).

The items of organizational readiness are related with the financial and human resource readiness. The personal communication (personal communication, 9th February 2017) explains that the government have provide the financial assistance but these SMEs failed to show expected results. This situation explain that the SMEs did not have problems realated with fund to adopt the E-commerce. Also, with the high unemployment rate in Kurdistan also contribute to the resources related with human (Tasie, 2017). Both of these situation clearly reported that civil conflict does not have influence in the organization readiness, that show support for result under H9d.

The direct effect of this study shows there is a insignificant relationship between organizational innovativeness and E-commerce adoption. Also, the moderating testing reveals that civil conflict did not moderate the relationship between organizational innovativeness and E-commerce adoption. The situation explains that the organizational innovativeness perceived by firms has insignificant the decision to adopt E-commerce and the intensity of civil conflict has no effect the decision to adopt this technology. The result of this study is not supporting previous study that claimed civil conflict moderated organizational innovativeness such as facilitating conditions with the continuance usage of the e-government services (Faaeq, 2014).

Moreover, Ministry of Planning (2013) reported that the 68% of SMEs in Iraq belong to family business, even though the result of this study show that the are between the age 30 to 39 years old, therefore it can be concluded that the owners of SMEs are the younger generations of family business. Past literature found that innovativess did not

provide a moderator effect between family management involvement and performance (Kellermanns et al., 2012). Another review study by Uhlaner et al. (2012) also concluded that not all family business accept innovativeness as a factor to promote the business growth. Moreover, the above review also found that many of family business are resist to accept changes. These discussion explain the reason why organization iinovativeness don't have significant direct relationship with the E-commerce adoption. Furthermore, these discussion also supported that innovativeness affected by the type of business but not influenced by the external factor such as civil conflict. Hence, H9e is not supported.

The direct effect of this study shows there is a significant relationship between absorptive capacity and E-commerce adoption. On the other hand, the moderating testing reveals that civil conflict did not moderate the relationship between absorptive capacity and E-commerce adoption. The situation explains that the absorptive capacity perceived by firms has influence the decision to adopt E-commerce and the intensity of civil conflict has no influence on the decision to adopt this technology. The result of this study not supported study by Khan et al (2012) that claimed civil conflict moderates the relationship between absorptive capacity such as e-service skill and the intention to use e-government service.

The USAID (2014) shows that the internet facilities in Iraq is good however, this technology is not been utilized to develop the E-commerce. With the availability of access to the world through website, the Iraqi were not isolated from the world. Therefore even though these people live in the civil conflict area, they only having constraint by the physical boundaries, but not with the global information. Moreover,

this situation explain why the owners' of SMEs could learn about many strategies and get benefits information that contribute to the growth of their business. There are a lots of information related with the strategies of successful business and the adoption of E-commerce is one of it. Clearly, absorptive capacity is not limited to the physical restriction such as civil conflict. Because leaning can take place through other means, as long as the information is accessible, therefore the absorptive capacity is happening in the business, since absorptive capacity relies on effort of people, the situation of civil conflict does not affect their transaction as discovered under this study.

5.3.4.3. Research Objective 6

Hypothesis (9g): Civil conflict moderates the relationship between the role of government and the E-commerce adoption.

Hypothesis (9h): Civil conflict moderates the relationship between the relational trust and the E-commerce adoption.

The direct effect of this study shows the insignificant relationship between the role of government and E-commerce adoption. However, the moderating testing exhibits that civil conflict moderate the relationship between the role of government and E-commerce adoption, where the situations shows that when civil conflict intense, firms prefer to adopt E-commerce and at this time the support of government is low because of the security to access the affected areas. However, when the civil conflict less intense, firms show less interest to adopt the E-commerce and they receive more support from government. This result indicates that civil conflict moderated the relationship between the role of government and adoption of E-commerce.

The result for this study contradicted previous study that found civil conflict does not moderate the relationship between external support and the use of e-government services (Faeeq, 2014). This is consistent with the view of Civil Conflict, that is, as a high level of Civil Conflict decreases the firm's freedom of action and it's within the normal state. In the case of Iraq, all financial support to companies that fall under the control of the Islamic state since 2014 (ISIS) because of the war, this would weaken the role of government in supporting these companies and thus difficult to adopt E-commerce under these dangerous conditions (HIICR, 2014, 2015; Khan et al., 2012). Accordingly, the government should make some plans to support those companies and compensate them and try to bring the companies that stopped working to work again in order to raise the level of the national economy.

The personal communication with the Head of Board Industrial Zone agrees that civil conflict give an impact to the development economy activities including E-commerce. (personal communication, 9th February 2017). The Head of Board Industrial Zone said, '..war and unstable security conditions, many projects have been left in the semi-implementation stages. In addition to the difficulty of the government access to areas under the control of armed groups such as Mosul since 2014..'. The civil conflict limits the government access to this area, hence many projects related with SMEs were neglected. Therefore, the development of SMEs affected even though these firms already received their support from the government. Hence, H9g is supported.

The direct effect of this study shows there is a significant relationship between relational trust and E-commerce adoption. On the other hand, the moderating testing exhibits that civil conflict did not moderate the relationship between relational trust and

E-commerce adoption. The situation explains that the relational trust of firms has influence in adoption of E-commerce and the intensity of civil conflict is not influencing the decision to adopt this technology. This result contradict the result of previous study that reported civil conflict moderated organizational readiness such as effort expectancy and the continuance usage of the e-government services (Faeeq, 2014). Previous studies of civil conflict reported that civil conflict produced mixed result for variables related with environmental factors. For example, a study by Khan et al. (2012) found that civil conflict moderated the external factor such as culture with intention to use e-service. However, the same study also reported that civil conflict does not moderate the relationship between social supports with intention to use e-service. Similarly, study by Fareeq (2014) the continuance usage of e-government services.

Another explanation to this situation is Iraq is a Muslim country and practices Muslim life. As a Muslim, everybody must ensure that what ever they do in their life must conform with the guideline provided by Islam. Similarly in business, Islam teaches every Muslim to be honest when doing the transactions in their business. This situation contributed to the reason why the relational trust have significant relationship with E-commerce adoption. Also, most of the suppliers in the industry belong to the extended family or '*khabila*', thus resulted the relational trust to have significant relationship with the E-commerce adoption. Civil conflict does not give an impact because relational trust related with the culture and believe but not by the external environment such as civil conflict. Hence, H9h is not supported.

5.4. Research Implications

Many insights have been presented in this study associated with technological, organizational, and environmental contexts, which constitute an impediment to adopt E-commerce in Iraqi SMEs, and perhaps this study contributes to add something to the limited studies that that examined Middle East in general and Iraq in particular.

In general, this study is considered as one of the very few studies conducted in the Arab world to validate the DOI, RDT theories and TOE framework to explain relationship between technological, organizational, and environmental contexts, and E-commerce adoption, by integrating the effect of the civil conflict factor. The study provided reasonable suggestions for the owners or managers of SMEs in Iraq, in addition to policy-makers in the Iraqi government, and discussed in detail in the following paragraphs.

5.4.1. Theoretical Implications

Intensity of competition is a significant impediment to the survival of firms, especially SMEs in the commercial markets. In addition, the adoption of E-commerce enables firms to position themselves into a competitive standing. Even though Iraqi governments' make huge efforts to increase E-commerce adoption among SMEs, but the adoption is still at minimum level. Prior research has identified a number of factors related to organization characteristics, technological characteristics, and environmental forces. With regard to this, two important limitations have not been addressed in the literature, namely; (1) there were limited studies attempting to explain the E-commerce under the conditions of civil conflicts, (2) there is an underestimation to the role of

relationship contextual factors and little consensus on how they should be incorporated into the adoption theories.

The countries that face civil conflict problems offer huge opportunities to be researched. However, due to the security issues related to the physical and information, the investigation into various issues related to civil conflict (including E-commerce) are not possible. Therefore, this study contribute to the development the research framework based on TOE framework and underpinned by DOI and RDT. Hence, this study attempted to fill those important gaps in E-commerce adoption literature by testing the TOE framework under the context of the civil conflict. Previous scholars reported that the variables of TOE framework may varies from one research context to another research context, thus the variables selected for a particular research are suitable to be researched for the similar setting. So, for this study, the researcher selected three variables for technological context (relative advantage, compatibility and complexity), three variables for organizational context (organizational readiness, organizational innovativeness and abortive capacity) and two variables for environmental context (role of government and relational trust). This study also included civil conflict as the moderator to explain the relationship between TOE variables to the E-commerce adoption.

Among all variables selected to be included in the research framework, there are two variables that contributes to the development of theory in SMEs which are absorptive capacity and civil conflict. There are limited studies focusing on absorptive capacity even though there were studies highlighted that absorptive capacity is one of the success ingredient for SMEs (Hutabarat & Pandin, 2014). Furthermore, previous study also

claimed that it is still a long way for SMEs to upgrade their level of knowledge and capitalize on technology transfer (Noor et al., 2015). Thus, this study proved that absorptive capacity is an important variable that influence the adoption of E-commerce among SMEs. Indirectly, this variable contributes to the new variable that can be explored in the organizational context for studies related with technology adoption among SMEs using organization as unit of analysis.

There are limited studies of SMEs that includes civil conflict in their research framework. However, few scholars of civil conflict tested this variable as the moderator as well as mediator at individual level and reported a mixed result between the antecedents and the continuance usage e-service (Faeeq, 2014; Khan et al, 2012). Therefore, this moderating effects result of civil conflict as moderator at organization level in the adoption of E-commerce among SMEs offers a better understanding on how civil conflict modify the relationship between the studied variables (relative advantage and role of government) and the adoption E-commerce among similar unit of analysis and research context. This result could assist the policy makers to formulate a strategy to promote commerce activities among SMEs even though their business operation located at the civil conflict area.

The proposed research framework was empirically tested to E-commerce adoption in the context of SMEs in Iraq. The results provided evidence supporting the validity and reliability of the framework. In addition, the research framework can be used as a research tool in examining determinant factors in the decision to adopt other types of businesses.

5.4.2. Practical Implications

The result of this study contributes to several practical contributions. The researcher found limited studies that focus on the adoption of E-commerce among SME in Iraq (Harash, Al-Tamimi, et al., 2014; Hashim, 2015; White, 2012). Therefore, this study is one of the comprehensive studies that offer the information about the indicator of E-commerce adoption in Iraq. Currently, the government is not able to predict accurately about this information due to the security and physical accessibility to location under the civil conflict area (personal communication, 9th February 2017). By having this information the government is able to plan the support required based on SMEs level of E-commerce adoption. Thus, in its efforts, government should not neglect the lower level of adopters. In fact government should work together with the higher level adopters in order to accelerate the adoption. By doing so, SMEs at every level of adopters are likely to adopt E-commerce simultaneously. This effort is very important, particularly at initial stage of E-commerce adoption. Once the adoption reaches certain level of popularity, network effects would set in to speed up E-commerce adoption. Thus encourage them to participate in E-commerce environment.

So far, the researcher found little studies that used TOE framework in studies related with SMEs in Iraq (Almoawi & Mahmood, 2012; Alsaad et al., 2014; Awa, Ojiabo, et al., 2015). Therefore, little is known about the variables that influence the decision to adopt E-commerce in this area. Hence, the result of the study provides important information about factors that need to be addressed by the government to foster the development of E-commerce in this country. The result of direct effect shows that technological variables (compatibility and complexity), organizational context (organizational readiness and absorptive capacity) and environmental variable

(relational trust) have significant relationship with adoption of E-commerce. Currently, majority of SMEs perceived that the technology available for their firms encourage them to adopt E-commerce. Similarly, they perceived that their firms are ready and able to acquire knowledge required for E-commerce environment. Also they believe that they have a reliable networks to support their operation in the E-commerce environment. This finding enrich the information related with the current situation of SMEs in Iraq, where these significant relationships require attention by the government and policy makers related to the program required to encourage SMEs to shift their traditional business to the E-commerce environment.

Civil conflict limits the physical and information access to the affected area; hence most of the government supports nowadays do not reach the SMEs in this area (personal communication, 9th February 2017). This situation is also explained by this study where civil conflict moderate negatively between role of government and the adoption of E-commerce. Since 2012, the government offers a development funds for SMEs in Iraq. However, the government faced difficulties to monitor the outcomes of the funds because of the civil conflict. However, the finding from this study shows that SMEs in Iraq perceived that the technology they have are compatible with E-commerce environment and the level of complexity to adopt is also acceptable, However, they have limited knowledge to utilized the funds provides by the government. The government should specify a strategic ways to tackle the issues by supporting private companies to assist SMEs in implementing their E-commerce activities. Thus, the government able to control of the development funds and at the same time monitors the E-commerce activities more efficient and effective.

Lack of studies related with adoption of E-commerce among SMEs give effects on the suitable training as many uncertainties are yet to uncover (Harash, Al-Tamimi, et al., 2014; Hashim, 2015; White, 2012). Another finding from this study provides solution to foster the adoption of E-commerce among SMEs. Firstly, SMEs in this area perceived that knowledge related with adoption of E-commerce influence the decision to adopt the technology. Secondly, civil conflict positively moderates the relationship between relational advantage and adoption of E-commerce. Combining these two finding suggests that the government should plan suitable training related with the adoption of the technology, so that the SMEs owners and managers realized the benefits of adoption of E-commerce in the civil conflict environment. This strategic plan must be aligned with the economic plan for Iraq and later could be used as a reference for other countries, especially in the Middle East that facing the civil conflict issue.

Past studies pointed out that a high level of trust would encourage the participators to have an open communication channel, increase information sharing and willingness to take risks with their partner (Shih, 2012; Shih et al., 2013; Wu et al., 2014). The result of this study proved that relational trust in the industry has significant impact to the adoption of E-commerce. The finding suggests that, in order to encourage SMEs to participate in E-commerce activities, the suppliers in the industry must participate in this environment too. The government can provide a portal to assist these activities, thus the government must support and monitor the integration of the transaction in the environment because of the issues involving the venerability of security system may give a negative impact to the adoption of the technology.

5.5. Limitations of the Study and Suggestion for Future Research

The current study was conducted on SMEs in Kurdistan region-Iraq (Erbil province, Sulaimaniya province, Duhok province) only because of the security and accessibility issue to other areas in Iraq. Furthermore, Kurdistan area is considered as a politically stable and shown an encouraging of economic activities, including entrepreneurial activities.

Data for this study were limited to several industries, namely tailoring and furnishing service, food products, pharmacy, money changer and transfer sector, paper products and stationery, and electrical appliances. The choice of these industries was due to the nature of their business operations that allow transaction to be made over internet because not every industry is suitable to adopt E-commerce approach in their daily operation.

The current study could be replicated on other Arab or especially countries that suffer from religious and civil conflicts, such as Iran, Syria, Yemen, Libya and other Middle East countries, and the results compared. This recommendation can help the researcher in the future to increase the investigation and access to more results in predicting the adoption of E-commerce and the variables affecting them.

In the current study, the results of the relationship between the TOE variables shows only two variables of technological context (compatibility and complexity), two of organizational context (organizational readiness and absorptive capacity) and one environmental context have significant relationship with the E-commerce. Three variables from each TOE context (relative advantage, organizational innovativeness

and role of government) appear to be insignificant with the adoption of technology. However the relationship between relational advantage and role of government were moderated by civil conflict. Therefore, for future studies, it has been recommended that the insignificant relationship should be tested again in the similar environment in order to confirm the finding of this study, thus explain the behavior of these variables in the other civil conflict context.

The current study adopted a quantitative method in order to achieve its research objectives. However, while conducting this research, the researcher found there are some factors that are unique to this area, for example the economic crisis related with the stability of oil price, refugees from other conflict areas including Syria and the instability of political situation. The variables related with the said situation only are able to obtain through qualitative method. Therefore, it is recommended that for future studies to employ a qualitative method in order to gauge the unique variables that will contribute to the richness of literature related with E-commerce in the civil conflict area.

5.6. Conclusions

The are limited studies that can be conducted in the conflict area due to the security and accessibility, even though these affected area offers plenty of issues require attentions from researchers around the globe. The adoption of E-commerce is seen as one of the academic area that need to be explored because it is able to provide several solutions to the issues, particularly in increasing the economic situation of the people in the affected area.

Since the researcher is an Iraqi, therefore, the opportunity to get the insight of the civil conflict area is better as compared to the researchers from other countries. After the study was conducted, the researcher found that, the finding translate the situation related with E-commerce adoption in Iraq. The researcher found that the variables such as compatibility, complexity, organizational readiness, absorptive capacity and relational trust paly important role in the decision to adopt E-commerce.

For this study, civil conflict has been used as the moderator to the factors influencing E-commerce adoption. The result also shows that civil conflict is a very important role to moderate the relationship between relational advantage and role of government to adopt the technology. However, civil conflict does not moderate the relationship between compatability of the technology and absorptive capacity with the E-commerce adoption because the technology available and accessibility in Iraq are at par with the latest technology available in the world. The organizational culture related with family business explains why civil conclict does not moderate the relationship with the organizational innovativeness and relational trust. Furthermore the influence of Islam as the main religion of this country explain why civil conflict not moderated the relationship between relational trust and absorptive capacity.

The overall results provides the insight related to the civil conflict area. It shows that, the economy activities still available in the conflict area. This study also proved that entrepreneuship able to reduce the dependency of the government with the revenue of oil and addressing the unemployment issues through the entrepreneurial activities.

Even though the evidence has generally supported the hypotheses, more research needs to be carried out to study other variables that can possibly affect the E-commerce

adoption. This study also highlights that the type of business influence some factors of affecting the E-commerce adoption. Furthermore, researchers form the civil conflict area must conduct more studies with various method of data collection to get more information related with the issue to improve the understanding and facts about the issues of SMEs and E-commerce adoption can be further enhanced. Hence, these results contribute to the theoretical, methodological and practical of the adoption of E-commerce in the civil conflict are. The researcher hopes that the results of the current study will provide an increasing knowledge and understanding of E-commerce adoption among SMEs under civil conflict, which has received little attention in the literature.

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APPENDIX A
Result for Data Analysis

Introduction

The result for the study was conducted using SmartPLS. It consists of three main parts namely (1) Assessment of Measurement Model, (2) Assessment of Structural Model, and (3) Testing of Moderating Effects

1. Assessment of Measurement Model

1a. Assessment of Indicator Reliability

	AC	CC	COMT	COMX	EC	OI	OR	RA	RG	RT
AC1	0.905									
AC10	0.946									
AC11	0.936									
AC12	0.948									
AC13	0.939									
AC14	0.945									
AC2	0.927									
AC3	0.921									
AC4	0.928									
AC5	0.937									
AC6	0.943									
AC7	0.942									
AC8	0.953									
AC9	0.945									
CC1		0.937								
CC2		0.962								
CC3		0.956								
CC4		0.935								
CC5		0.926								
CC6		0.694								
CC7		0.696								
COMT1			0.948							
COMT2			0.952							
COMT3			0.944							
COMT5			0.753							
COMT6			0.936							
COMT7			0.934							
COMX1				0.988						
COMX2				0.993						
COMX3				0.994						
COMX4				0.993						
COMX5				0.991						

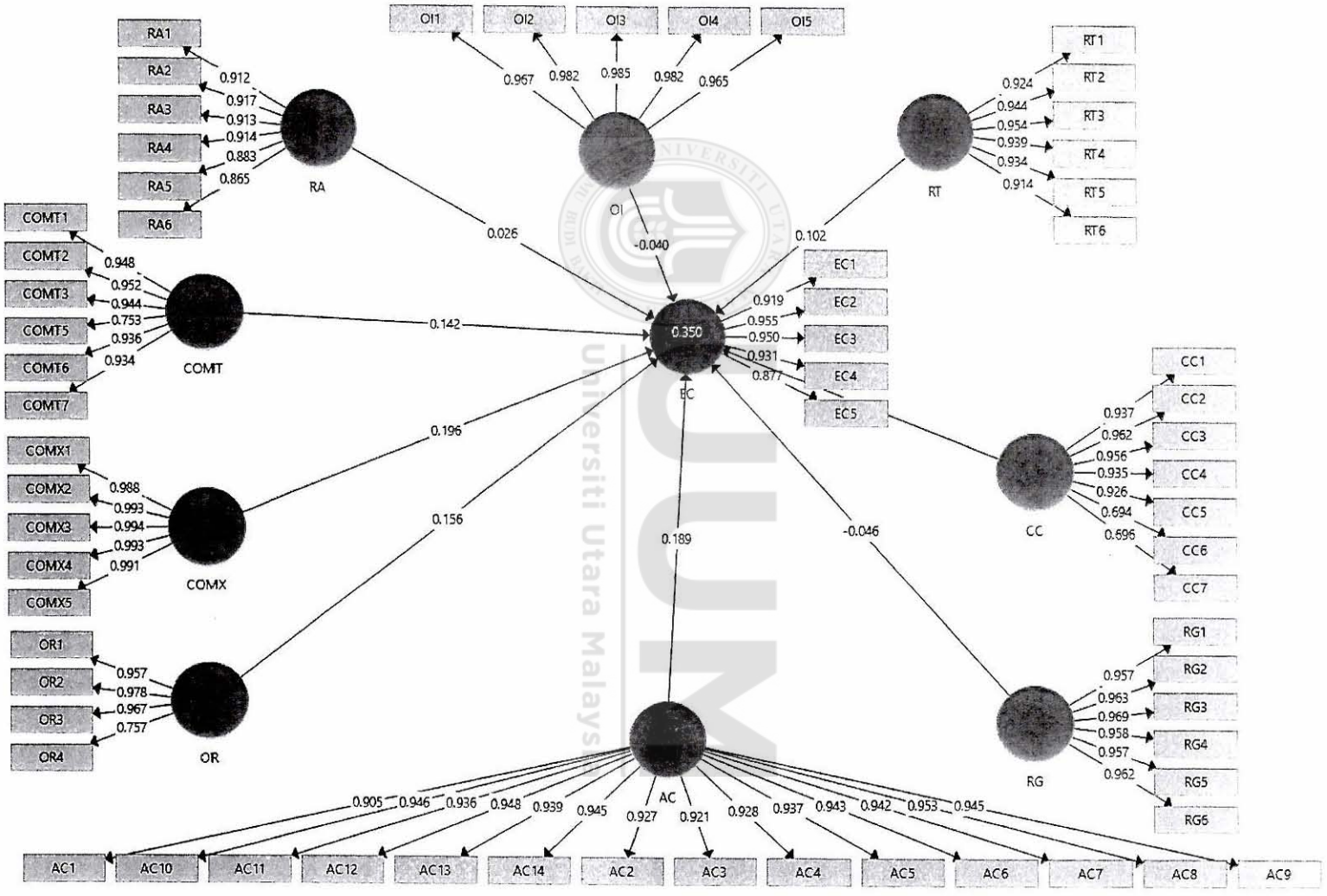
	AC	CC	COMT	COMX	EC	OI	OR	RA	RG	RT
EC1					0.919					
EC2					0.955					
EC3					0.95					
EC4					0.931					
EC5					0.877					
OI1						0.967				
OI2						0.982				
OI3						0.985				
OI4						0.982				
OI5						0.965				
OR1							0.957			
OR2							0.978			
OR3							0.967			
OR4							0.757			
RA1								0.912		
RA2								0.917		
RA3								0.913		
RA4								0.914		
RA5								0.883		
RA6								0.865		
RG1									0.957	
RG2									0.963	
RG3									0.969	
RG4									0.958	
RG5									0.957	
RG6									0.962	
RT1										0.924
RT2										0.944
RT3										0.954
RT4										0.939
RT5										0.934
RT6										0.914

1b. Assessment of Internal Consistency Reliability

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
AC	0.989	0.99	0.990	0.878
CC	0.953	0.989	0.959	0.774
COMT	0.959	0.965	0.968	0.835
COMX	0.996	0.996	0.997	0.984
EC	0.959	0.959	0.968	0.859
OI_	0.988	0.988	0.990	0.953
OR	0.936	0.958	0.956	0.845
RA	0.954	0.962	0.963	0.812
RG	0.983	0.992	0.986	0.923
RT	0.971	0.972	0.977	0.874

1c. Assessment of Discriminant Validity

	AC	CC	COMT	COMX	EC	OI_	OR	RA	RG	RT
AC	**0.937**									
CC	0.284	**0.880**								
COMT	0.427	0.279	**0.914**							
COMX	0.151	0.131	-0.044	**0.992**						
EC	0.437	0.385	0.357	0.269	**0.927**					
OI_	0.709	0.221	0.387	0.129	0.371	**0.976**				
OR	0.633	0.246	0.455	0.163	0.428	0.764	**0.919**			
RA	0.424	0.316	0.642	-0.049	0.337	0.358	0.49	**0.901**		
RG	0.235	-0.016	0.163	0.086	0.085	0.132	0.252	0.172	**0.961**	
RT	0.339	0.411	0.26	0.104	0.353	0.326	0.397	0.362	0.109	**0.935**


RA1
RA2
RA3
RA4
RA5
RA6
0.912
0.917
0.913
0.914
0.883
0.865
RA
OI1
OI2
OI3
OI4
OI5
0.967
0.982
0.985
0.982
0.965
OI
RT1
RT2
RT3
RT4
RT5
RT6
0.924
0.944
0.954
0.939
0.934
0.914
RT
0.026
-0.040
0.102
COMT1
COMT2
COMT3
COMT5
COMT6
COMT7
0.948
0.952
0.944
0.753
0.936
0.934
COMT
0.142
0.350
EC
EC1
EC2
EC3
EC4
EC5
0.919
0.955
0.950
0.931
0.877
COMX1
COMX2
COMX3
COMX4
COMX5
0.988
0.993
0.994
0.993
0.991
COMX
0.196
0.156
0.189
-0.046
CC1
CC2
CC3
CC4
CC5
CC6
CC7
0.937
0.962
0.956
0.935
0.926
0.694
0.696
CC
OR1
OR2
OR3
OR4
0.957
0.978
0.967
0.757
OR
AC
RG1
RG2
RG3
RG4
RG5
RG6
0.957
0.963
0.969
0.958
0.957
0.962
RG
0.905
0.946
0.936
0.948
0.939
0.945
0.927
0.921
0.928
0.937
0.943
0.942
0.953
0.945
AC1
AC10
AC11
AC12
AC13
AC14
AC2
AC3
AC4
AC5
AC6
AC7
AC8
AC9

2. Assessment of Structural Model

2a. Collinearity

	EC
AC	2.318
CC	1.316
COMT	1.846
COMX	1.091
OI_	3.147
OR	3.019
RA	2.008
RG	1.129
RT	1.393

2b. Coefficient of Determination (R^2)

	R Square	R Square Adjusted
EC	0.35	0.329

2c. Path Coefficient

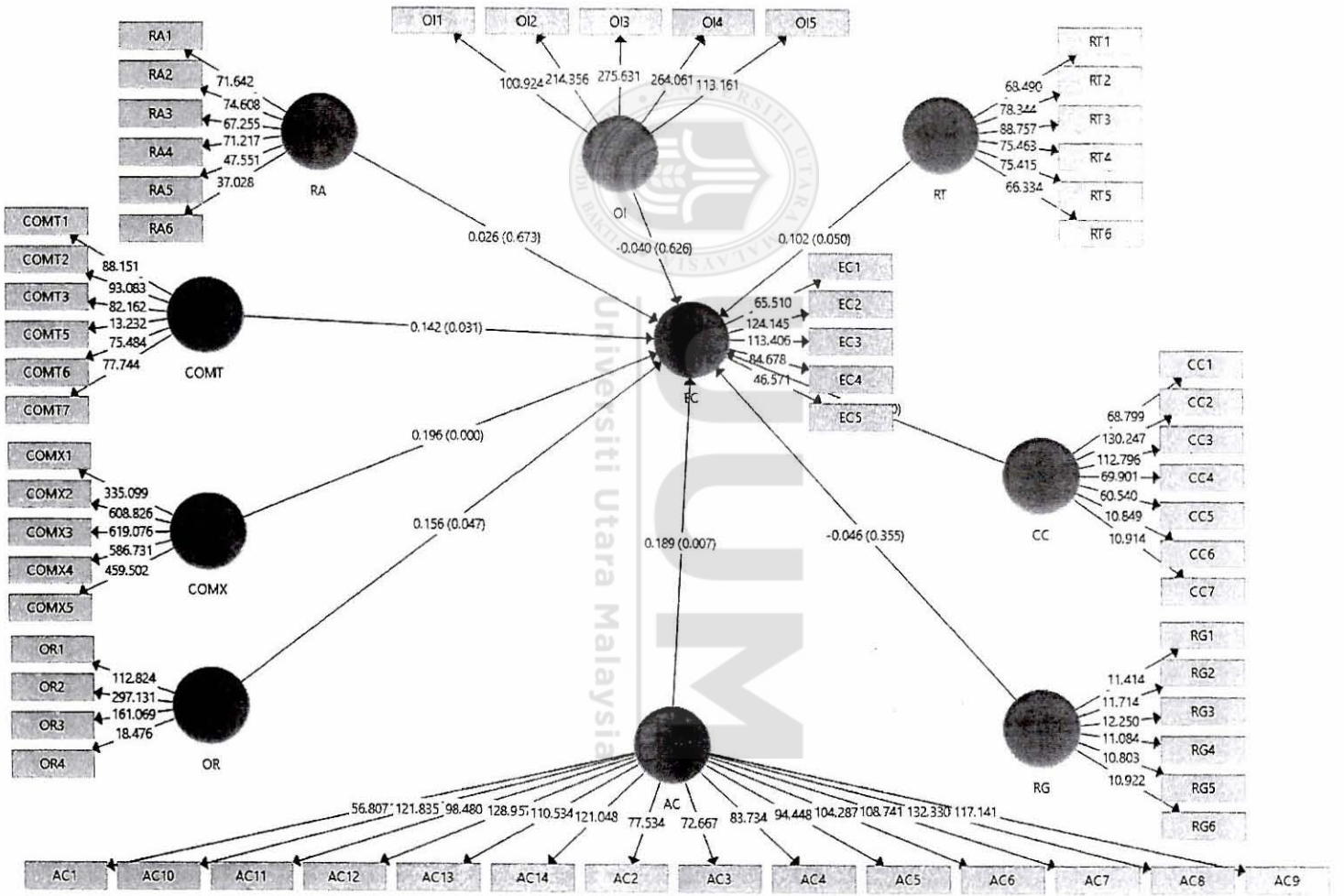
	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
AC -> EC	**0.189**	0.182	0.070	**2.710**	**0.007**
CC -> EC	**0.186**	0.188	0.050	**3.750**	**0.000**
COMT -> EC	**0.142**	0.147	0.065	**2.164**	**0.031**
COMX -> EC	**0.196**	0.199	0.050	**3.929**	**0.000**
OI_ -> EC	-0.040	-0.036	0.082	0.487	0.626
OR -> EC	**0.156**	0.151	0.079	**1.985**	**0.047**
RA -> EC	0.026	0.026	0.061	0.422	0.673
RG -> EC	-0.046	-0.044	0.050	0.925	0.355
RT -> EC	**0.102**	0.102	0.052	**1.962**	**0.050**

2d. Calculation of Effect size, f^2

Exogenous Variable	R^2_{incl}	R^2_{excl}	f^2	Decision
Relative Advantage	0.356	0.356	0.000	No effect
Compatibility	0.356	0.339	0.026	Small
Complexity	0.356	0.322	0.051	Small
Organization Readiness	0.356	0.348	0.012	Small
Organization innovativeness	0.356	0.355	0.002	No effect
Absorptive Capacity	0.356	0.341	0.023	Small
Role of the Government	0.356	0.354	0.003	No effect
Relational Trust	0.356	0.349	0.011	Small
Civil Conflict	0.356	0.331	0.038	Small

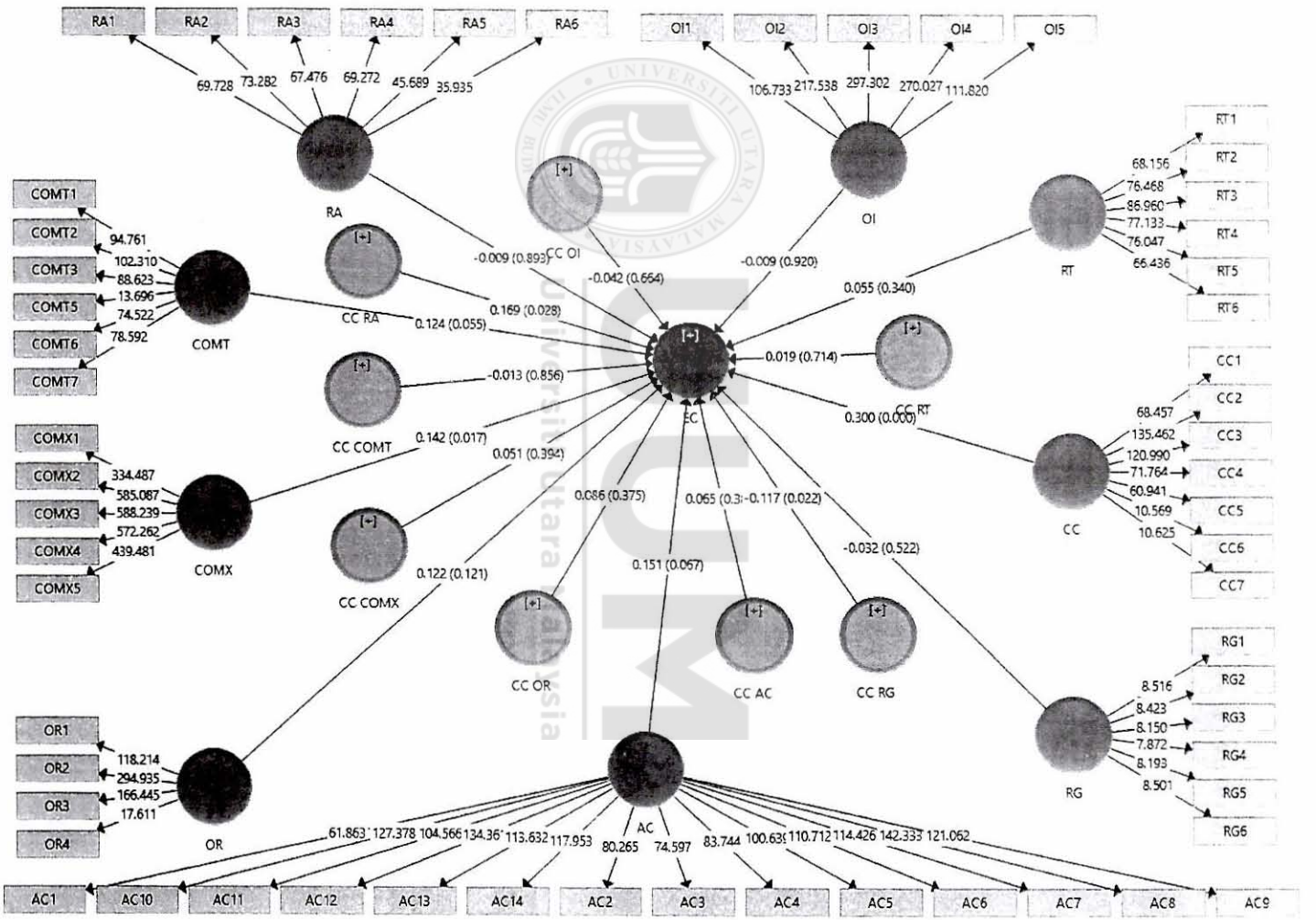
2e. Calculation of Effect size, q^2

Exogenous Variable	Q^2_{incl}	Q^2_{excl}	q^2	Decision
Relative Advantage	0.306	0.306	0.000	No effect
Compatibility	0.306	0.292	0.020	Small
Complexity	0.306	0.265	0.059	Small
Organizational Readiness	0.306	0.299	0.010	Small
Organization innovativeness	0.306	0.306	0.000	No effect
Absorptive Capacity	0.306	0.294	0.017	Small
Role of the Government	0.306	0.304	0.003	No effect
Relational Trust	0.306	0.300	0.009	No effect
Civil Conflict	0.306	0.285	0.030	Small


OI1
OI2
OI3
OI4
OI5
100.924
214.356
275.631
264.061
113.161
OI
RA1
RA2
RA3
RA4
RA5
RA6
71.642
74.608
67.255
71.217
47.551
37.028
RA
RT1
RT2
RT3
RT4
RT5
RT6
68.490
78.344
88.757
75.463
75.415
66.334
RT
0.026 (0.673)
-0.040 (0.626)
0.102 (0.050)
COMT1
COMT2
COMT3
COMT5
COMT6
COMT7
88.151
93.083
82.162
13.232
75.484
77.744
COMT
0.142 (0.031)
EC1
EC2
EC3
EC4
EC5
65.510
124.145
113.406
84.678
46.571
EC
0.196 (0.000)
COMX1
COMX2
COMX3
COMX4
COMX5
335.099
608.826
619.076
586.731
459.502
COMX
0.156 (0.047)
0.189 (0.007)
-0.046 (0.355)
CC1
CC2
CC3
CC4
CC5
CC6
CC7
68.799
130.247
112.796
69.901
60.540
10.849
10.914
CC
OR1
OR2
OR3
OR4
112.824
297.131
161.069
18.476
OR
RG1
RG2
RG3
RG4
RG5
RG6
11.414
11.714
12.250
11.084
10.803
10.922
RG
AC
56.807
121.835
98.480
128.957
110.534
121.048
77.534
72.667
83.734
94.448
104.287
108.741
132.330
117.141
AC1
AC10
AC11
AC12
AC13
AC14
AC2
AC3
AC4
AC5
AC6
AC7
AC8
AC9

3. Moderating Effects

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
AC -> EC	0.151	0.144	0.082	1.838	0.067
CC -> EC	0.300	0.308	0.060	4.977	0.000
CC AC -> EC	0.065	0.070	0.074	0.875	0.382
CC COMT -> EC	-0.013	-0.024	0.070	0.182	0.856
CC COMX -> EC	0.051	0.061	0.060	0.854	0.394
CC OI -> EC	-0.042	-0.031	0.096	0.434	0.664
CC OR -> EC	0.086	0.080	0.096	0.888	0.375
CC RA -> EC	**0.169**	0.177	0.077	**2.199**	**0.028**
CC RG -> EC	**-0.117**	-0.112	0.051	**2.302**	**0.022**
CC RT -> EC	0.019	0.028	0.051	0.367	0.714
COMT -> EC	0.124	0.123	0.065	1.923	0.055
COMX -> EC	0.142	0.134	0.059	2.392	0.017
OI_ -> EC	-0.009	-0.013	0.086	0.100	0.920
OR -> EC	0.122	0.116	0.079	1.553	0.121
RA -> EC	-0.009	-0.023	0.065	0.135	0.893
RG -> EC	-0.032	-0.029	0.050	0.640	0.522
RT -> EC	0.055	0.054	0.058	0.955	0.340


RA1
RA2
RA3
RA4
RA5
RA6
69.728
73.282
67.476
69.272
45.689
35.935
RA
OI1
OI2
OI3
OI4
OI5
106.733
217.538
297.302
270.027
111.820
OI
COMT1
COMT2
COMT3
COMT5
COMT6
COMT7
94.761
102.310
88.623
13.696
74.522
78.592
COMT
COMX1
COMX2
COMX3
COMX4
COMX5
334.487
585.087
588.239
572.262
439.481
COMX
OR1
OR2
OR3
OR4
118.214
294.935
166.445
17.611
OR
CC RA
CC OI
CC COMT
CC COMX
CC OR
CC AC
CC RG
CC RT
-0.009 (0.893)
-0.042 (0.664)
-0.009 (0.920)
0.055 (0.340)
0.169 (0.028)
0.124 (0.055)
0.019 (0.714)
-0.013 (0.856)
0.142 (0.017)
0.051 (0.394)
0.300 (0.000)
0.086 (0.375)
0.065 (0.3
-0.117 (0.022)
0.122 (0.121)
0.151 (0.067)
-0.032 (0.522)
EC
RT
RT1
RT2
RT3
RT4
RT5
RT6
68.156
76.468
86.960
77.133
76.047
66.436
CC
CC1
CC2
CC3
CC4
CC5
CC6
CC7
68.457
135.462
120.990
71.764
60.941
10.569
10.625
RG
RG1
RG2
RG3
RG4
RG5
RG6
8.516
8.423
8.150
7.872
8.193
8.501
AC
AC1
AC10
AC11
AC12
AC13
AC14
AC2
AC3
AC4
AC5
AC6
AC7
AC8
AC9
61.863
127.378
104.566
134.36
113.632
117.953
80.265
74.597
83.744
100.63
110.712
114.426
142.333
121.062

APPENDIX B
Questionnaires (English)

Questionnaire No.

SURVEY OF SMEs IN IRAQ

Dear Sir

I am currently a PhD student attached to the College of Business, Universiti Utara Malaysia. I am conducting a research on the influence of technology organization, and environment on e-commerce adoption among SMEs in Iraq. The results of this research may benefit organizations such as yours by identifying variables that can increase firm performance.

I wish to request between 15 to 20 minutes of your time to complete the enclosed questionnaire. Each question is critical to the success of this research. Each section also includes instructions to ensure accurate responses. All responses will be kept confidential.

I thank you in advance for your cooperation and contribution to this study.

PhD Candidate: Abdulsatar Abduljabbar Sultan.

Place of work: Lebanese French University (LFU) Erbil-Iraq.

Place of study: University Utara Malaysia (UUM) - Malaysia.

E-Mail address: abdulsatarsultan@gmail.com

Organization Profile: Questions in this part relate closely with your firm profile. **Please click on appropriate choice.**

1. Number of Employees	□ 1-5	□ 6-9	□ 10-15
	□ 16- 20	□ 21-29	
2. Organization Location	□ Erbil	□ Sulaymaniyah	□ Duhok
3. Type of industry	□ Tailoring and Furnishing Service	□ Food Products	
	□ Pharmacy	□ Money changer and transfer	
	□ Paper Products and stationery	□ Electrical Appliances and Products	

4. Which one of the following best describes your current e-commerce status? **Please choose only one option**

A. Not connected to the Internet, no e-mail. ☐

B. Connected to the Internet with e-mail but no website ☐

C. Static Web: that is, publishing basic organization information on the web without any interactivity. ☐

D. Interactive web presence: that is, accepting queries, e-mail, and form entry from users. ☐

E. Transactive web: that is, online selling and purchasing of products and services including customer service. ☐

F. Integrated web: that is, a website connecting your computer systems with online systems allowing most of the business transactions to be conducted electronically, such as to record all sales transactions, update inventory records and generate all appropriate paperwork – i.e. invoices and receipts. ☐

Owner's Profile: Questions in this part relate closely with your profile. **Please click on appropriate choice.**

5. Gender	□ Male		□ Female
6. Age	□ 18-29		□ 30-39
	□ 40-49		□ 50 – 60+
7. Education	□ Below High School	□ High School	□ Diploma
	□ Degree	□ Master	□ Doctorate
8. Owner's Tenure (Year)	□ Less than one	□ 1-5	□ 6-10
	□ 11-15		□ More than 15

9. Relative advantage: These include 'direct benefits' like reduction in transaction errors and transaction costs, improved data accuracy and information quality, and faster application process. On the other hand, 'indirect benefits' associated include better customer services and improved relationship with business partners

Please evaluate the following statements:	Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
E-commerce technologies allow our firm to manage its operations efficiently	1	2	3	4	5	6
E-commerce improve the quality of our operations	1	2	3	4	5	6
E-commerce enable us to perform our operations more quickly	1	2	3	4	5	6
E-commerce is useful to expand the market share for existing products/services.	1	2	3	4	5	6
E-commerce is useful to improve customer satisfaction.	1	2	3	4	5	6
E-commerce is useful to improve customer service.	1	2	3	4	5	6

10. Perceived Compatibility: Compatibility is defined as the degree to which an innovation was perceived as consistent with the existing values, needs, and past experiences of the potential adopter

Please evaluate the following statements:	Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
Use of e-commerce technologies fit well with the way we operate	1	2	3	4	5	6
Use e-commerce technologies fit into our working style	1	2	3	4	5	6
Use of e-commerce technologies is completely compatible with our current business operations	1	2	3	4	5	6
The skills required to use e-commerce are too complex for our employees	1	2	3	4	5	6
Integrating these technologies in our current work practices will be very difficult	1	2	3	4	5	6
Adoption of e-commerce fits the work style of firm.	1	2	3	4	5	6
Adoption of e-commerce is consistent with our business strategy	1	2	3		4	5

11. Perceived Complexity: Complexity relates to the level of ease with which the e-commerce technology can be understood by the firms. Basically, the easier to understand the technology and its application, the faster and more immediately the adoption process and vice versa

Please evaluate the following statements:	Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
Using e-commerce technologies require a lot of mental effort	1	2	3	4	5	6
We will use e-commerce technologies in the future	1	2	3	4	5	6
Adoption of e-commerce is too difficult to be incorporated in our business operations.	1	2	3	4	5	6
We believe that an e-commerce is complex to implement.	1	2	3	4	5	6
We believe that developing an e-commerce is a complex process.	1	2	3	4	5	6

12. Organizational Readiness: Organizational readiness is defined as the availability of the needed organizational resources for adoption.						
Please evaluate the following statements:	Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
Our firm has a good understanding of how e-commerce technologies can be used in our business	1	2	3	4	5	6
We have the necessary technical, managerial and other skills to implement e-commerce.	1	2	3	4	5	6
Our business values and norms would not prevent us from adopting e-commerce in our operations.	1	2	3	4	5	6
We have enough financial allocations to adopt e-commerce.	1	2	3	4	5	6

13. Organizational Innovativeness: Organizational innovativeness is the openness to new ideas as an aspect of a firm's culture						
Please evaluate the following statements:	Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
Management actively seeks innovative ideas.	1	2	3	4	5	6
Innovation in this organization is perceived as too risky and is resisted.	1	2	3	4	5	6
Innovation in our firm's processes is encouraged.	1	2	3	4	5	6
Our Research and development infrastructure encourages us to be progressive, forward looking and creative.	1	2	3	4	5	6
The top manager of my firm favor a strong emphasis on Marketing of tried and the true products or services.	1	2	3	4	5	6

14. Absorptive Capacity: Firms' capability to exploit new, valuable external knowledge and predict the nature of technological advances.						
Please evaluate the following statements:	Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
Searching for relevant external information is every-day business in our organization.	1	2	3	4	5	6
Our employees are encouraged to identify and consider external information sources.	1	2	3	4	5	6
We expect that our employees acquire relevant external information.	1	2	3	4	5	6
Ideas and concepts obtained from external sources are quickly analyzed and shared.	1	2	3	4	5	6
We work together across the organization to interpret and understand external information.	1	2	3	4	5	6
In our organization, external information is quickly exchanged between businesses.	1	2	3	4	5	6
We regularly organize and conduct meetings to discuss new insight.	1	2	3	4	5	6
Our employees have the ability to structure and use newly collected information.	1	2	3	4	5	6
Our employees are used to preparing newly collected information for further purposes and making it available.	1	2	3	4	5	6
Our employees are able to integrate new information into their work.	1	2	3	4	5	6
Our employees regularly engage in the development of prototypes or new concepts.	1	2	3	4	5	6
Our employees apply new knowledge in the workplace to respond quickly to environment changes.	1	2	3	4	5	6
Most of the time we are ahead of our competitors in developing and launching new products.	1	2	3	4	5	6
We have considerable capacity for technological development.	1	2	3	4	5	6

15. Role of Government: Government support refers to the assistance provided by the authority to encourage the spread of IS innovations in businesses						
Please evaluate the following statements:	Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
The government is providing us with incentives to adopt e-commerce technologies	1	2	3	4	5	6
The government is active in setting up the facilities to enable e-commerce	1	2	3	4	5	6
The government plays an important role in promoting e-commerce in SMEs	1	2	3	4	5	6
Business laws support e-commerce.	1	2	3	4	5	6
The government is helping in giving assistance to help SMEs to use e-commerce	1	2	3	4	5	6
The government often informs us about the good points of e-commerce.	1	2	3	4	5	6

16. Relational Trust: Relational trust is an environmental factor that captures the extent to which a focal firm expects a certain degree of stability and certainty in its relationship.						
Please evaluate the following statements:	Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
Our business partner is competent and effective in its interactions with our organization.	1	2	3	4	5	6
Our business partner performs all of its roles very well.	1	2	3	4	5	6
Our business partner would act in our best interest.	1	2	3	4	5	6
Our business partner would do its best to provide assistance.	1	2	3	4	5	6
Our business partner is truthful in its dealings with our organization.	1	2	3	4	5	6
Our organization would characterize this business partner as being honest.	1	2	3	4	5	6

17. E-commerce Adoption: This section is about the extent to which your organization uses e-commerce.						
Please evaluate the following statements:	Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
Our company uses e-commerce/e-payment, at all times, for its transactions	1	2	3	4	5	6
Our company provide customers with general information about our firm (e.g., via web sites, email, information boards).	1	2	3	4	5	6
Our company send customers regular updates about new products and other developments within our firm (e.g., via email, what's new page).	1	2	3	4	5	6
Our company provide information in response to consumer questions or requests (e.g., via Q&A page, intelligent agents).	1	2	3	4	5	6
Our company accept orders and payments electronically from customers.	1	2	3	4	5	6

18. Civil conflicts : Civil conflicts are defined as clashes of interests and expressed struggles for political dominance among groups that have mismatched goals and interests						
Please evaluate the following statements:	Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
I feel a sense of unease when I think about the war in Iraq.	1	2	3	4	5	6
I feel anxious when thinking about the war in Iraq.	1	2	3	4	5	6
When I think about the war in Iraq, I get upset.	1	2	3	4	5	6
I am very concerned about how the war in Iraq will end.	1	2	3	4	5	6
I worry this conflict in Iraq will only get worse.	1	2	3	4	5	6
War imposed limitations on our creative capabilities	1	2	3	4	5	6
the current war thwarted the expansion of our company work	1	2	3	4	5	6

APPENDIX C
Questionnaires (Arabic)

رقم الاستمارة

استبيان حول تطبيق التجارة الالكترونية في الشركات العراقية الصغيرة والمتوسطة الحجم

السيد(ة)العزيز(ة)

يقوم الطالب الدكتوراة **عبدالستار عبدالجبار سلطان** من الجامعة الشمالية الماليزية (أوتارا) كلية ادارة الاعمال/ قسم الادارة التكنولوجية واللوجستية باجراء بحث حول تأثير العوامل التكنولوجية، المنظمية والبيئية على تطبيق التجارة الالكترونية في الشركات الصغيرة والمتوسطة الحجم. حيث ستسهم نتائج هذه الدراسة في توجيه هذه الشركات للاستفادة من تطبيقات التجارة الالكترونية ورفع ادائها.

أرجو منحي مابين 15 الى 20 دقيقة من وقتك لاكمال ملئ الاستمارة. كل سؤال هو بالغ الاهمية بالنسبة لنجاح هذا البحث ويتضمن كل قسم تعليمات لضمان استجابات دقيقة. سيتم الاحتفاظ بسرية جميع الاستجابات.

اشكر لكم مقدماً تعاونكم معي والمساهمة في هذه الدراسة.

طالب الدكتوراة : عبدالستار عبدالجبار سلطان

مكان العمل : الجامعة اللبنانية الفرنسية – العراق – اربيل

مكان الدارسة : الجامعة الشمالية الماليزية (اوتارا)

البريد الالكتروني : abdulsatarsultan@gmail.com

معلومات عن الشركة : الاسئلة في هذا القسم تتعلق بعلومات عامة عن شركتك (يرجى اختيار الاجابة المناسبة)

1. عدد موظفين الشركة	5-1□	9-6□	15-10□	
	20-16□	29-21□		

2. موقع الشركة	□ اربيل	□سليمانية	□ دهوك
3. نوع النشاط او المجال الذي تعمل بة الشركة	□الصناعات الغذائية والاطعمة		□خدمات الخياطة والمفروشات
	□الصناعات الدوائية		□ خدمات الصيرفة والتحول المالي
	□الصناعات الورقية والقرطاسية		□المنتجات الالكترونية والكهربائية

4. أي من الجمل التالية تصف مستوى تطبيق وتبني التجارة الالكترونية لدى شركتكم. **الرجاء اختيار خيار واحد فقط**

A. لا يوجد للمنظمة اتصال بالانترنت وبريد الكتروني.	( )
B. لدى الشركة اتصال بالانترنت وبريد الكتروني ولايوجد لدينا موقع على شبكة الانترنت.	( )
C. لدى الشركة موقع غير تفاعلي على الشبكة يوفر معلومات تعريفة عن الشركة فقط.	( )
D. لدى الشركة موقع تفاعلي على الشبكة يسمح بارسل واستقبال الاستفسارات وارسال البريد الالكتروني.	( )
E. لدى الشركة موقع تفاعلي على الشبكة يتم من خلالة البيع والشراء للمنتجات والخدمات عبر الانترنت.	( )
F. لدى المنظمة شبكة وموقع متكامل يتم من خلالة ربط نظم معلومات الشركة مع موقعها الالكتروني للسماح لاكبر عدد من المعاملات التجارية الالكترونية كتسجيل معاملات البيع والتواصل مع الزبائن والموردين.	( )

معلومات عن مالك الشركة : الاسئلة في هذا الجزء تتعلق بشكل وثيق بالمعلومات الخاصة بك. يرجى اختيار الاجابة المناسبة.

5. الجنس	□ ذكر		□ انثى
6. العمر	□ 18-29		□ 30-39
	□ 40-49		□ 50 – 60+
7. مستوى التعليم	□ اقل من الاعدادية	□ اعدادية	□ دبلوم
	□ بكلوريوس	□ ماجستير	□ دكتوراة
8. عدد سنوات الخبرة للمدير او المالك	□ اقل من سنة	□ 1-5	□ 6-10
	□ 11-15		□اكثر من 15 سنة

العوامل المؤثرة على نية تطبيق التجارة الالكترونية

القسم التالي يتعلق بموقفك تجاه اعتماد التجارة الإلكترونية. يرجى توضيح ذلك، يرجى وضع دائرة حول الرقم المناسب الذي يصف يعبر عن رايك.

الفوائد المتوقعة: يقيس هذا العامل مستوى اعتقادكم للفوائد المتوقعة من تبني التجارة الالكترونية وتشمل هذه "الفوائد المباشرة" مثل الحد من أخطاء المعاملات وتكاليف المعاملات، وتحسين دقة البيانات ونوعية المعلومات، وتسريع العمليات الادارية. من ناحية أخرى، وتشمل "فوائد غير مباشرة" مرتبطة بخدمات أفضل للعملاء وتحسين العلاقة مع الشركاء التجاريين.

يرجى تقيم العبارات الاتية :	لا اوافق بشدة (1)	لا اوافق (2)	لا اوافق الى حد ما (3)	اوافق الى حد ما (4)	اوافق (5)	اوافق بشدة (6)
تمكن التجارة الالكترونية شركتنا من ادراة عملياتها بكفاءة في ظل البيئة العراقية.	1	2	3	4	5	6
تحسن التجارة الالكترونية جودة ونوعية العمليات في شركتنا في ظل البيئة العراقية.	1	2	3	4	5	6
تمكن التجارة الالكترونية شركتنا من اداء عملياتها بسرعة اكبر في ظل البيئة العراقية.	1	2	3	4	5	6
تمكن التجارة الالكترونية شركتنا من زيادة حصتها السوقية للمنتجات والخدمات في السوق العراقية.	1	2	3	4	5	6
تحسن التجارة الالكترونية علاقة شركتنا برضا الزبون العراقي.	1	2	3	4	5	6
تحسن التجارة الالكترونية الخدمة المقدمة من شركتنا الى الزبون العراقي.	1	2	3	4	5	6

التوافقية : يقيس هذا العامل مستوى اعتقادكم بأن تطبيق التجارة الالكترونية متوافق مع شركتكم من النواحي الفنية والتقنية

يرجى تقيم العبارات الاتية :	لا اوافق بشدة (1)	لا اوافق (2)	لا اوافق الى حد ما (3)	اوافق الى حد ما (4)	اوافق (5)	اوافق بشدة (6)
استخدام تقنيات التجارة الإلكترونية يتناسب بشكل جيد مع الطريقة التي نعمل بها في شركتنا.	1	2	3	4	5	6
استخدام تقنيات التجارة الإلكترونية تنسجم مع أسلوب عملنا.	1	2	3	4	5	6
استخدام تقنيات التجارة الإلكترونية متوافق بشكل تام مع عمليات الحالية في شركتنا.	1	2	3	4	5	6
المهارات اللازمة لاستخدام التجارة الإلكترونية هي معقدة للغاية لموظفينا	1	2	3	4	5	6
دمج تقنيات التجارة الالكترونية في ممارسات العمل الحالية لدينا من الصعب جدا.	1	2	3	4	5	6
تطبيق التجارة الإلكترونية يناسب مع اسلوب عمل شركتنا.	1	2	3	4	5	6
تطبيق التجارة الإلكترونية يتسق مع استراتيجية أعمالنا.	1	2	3	4	5	6

درجة التعقيد : يقيس هذا العامل مستوى اعتقادكم بأن تطبيق التجارة الالكترونية معقد						
يرجى تقيم العبارات الاتية :	**لا اوافق بشدة (1)**	**لا اوافق (2)**	**لا اوافق الى حد ما (3)**	**اوافق الى حد ما (4)**	**اوافق (5)**	**اوافق بشدة (6)**
استخدام تقنيات التجارة الإلكترونية تتطلب الكثير من الجهد العقلي والذهني.	1	2	3	4	5	6
سوف نستخدم تقنيات التجارة الإلكترونية في المستقبل	1	2	3	4	5	6
من الصعب جدا تطبيق التجارة الإلكترونية وادراجها في عملياتنا.	1	2	3	4	5	6
نعتقد أن التجارة الإلكترونية هي معقدة في تنفيذها.	1	2	3	4	5	6
نعتقد أن استحداث التجارة الإلكترونية هي عملية معقدة.	1	2	3	4	5	6
الاستعداد التنظيمي: يقيس هذا العامل مستوى اعتقادكم بمدى توافر الموارد التنظيمية اللازمة لتطبيق التجارة الالكترونية في شركتكم.						
يرجى تقيم العبارات الاتية :	**لا اوافق بشدة (1)**	**لا اوافق (2)**	**لا اوافق الى حد ما (3)**	**اوافق الى حد ما (4)**	**اوافق (5)**	**اوافق بشدة (6)**
شركتنا لديها فهم جيد في كيفة استخدام تقنيات التجارة الإلكترونية في أعمالنا.	1	2	3	4	5	6
لدينا المهارات الفنية والإدارية وغيرها من التدابير اللازمة لتنفيذ وتطبيق التجارة الإلكترونية.	1	2	3	4	5	6
القيم والمعايير في اعمالنا لا تمنعنا من تطبيق التجارة الإلكترونية في عملياتنا.	1	2	3	4	5	6
لدينا مخصصات مالية كافية لتطبيق التجارة الإلكترونية.	1	2	3	4	5	6
9. **الإبتكار التنظيمي:** يقيس هذا العامل مستوى اعتقادكم بشان الانفتاح على الأفكار الجديدة بوصفها جانبا من جوانب ثقافة الشركة اللازمة لتطبيق التجارة الالكترونية.						
يرجى تقيم العبارات الاتية :	**لا اوافق بشدة (1)**	**لا اوافق (2)**	**لا اوافق الى حد ما (3)**	**اوافق الى حد ما (4)**	**اوافق (5)**	**اوافق بشدة (6)**
تسعى إدارة الشركة بفعالية نحو الأفكار المبتكرة.	1	2	3	4	5	6
ينظر الى الابتكار في هذه الشركة كمخاطرة كبيرة جدا، ويجب مقاومته.	1	2	3	4	5	6
شركتنا تشجع الابتكار في عملياتها.	1	2	3	4	5	6
البنية التحتية للبحث والتطوير في شركتنا مشجعة لنا أن نتطلع نحو الابداع.	1	2	3	4	5	6
المدير الاعلى في شركتي يفضل و يركيز بشكل قوي على تسويق المنتجات أو الخدمات المجربة والحقيقية.	1	2	3	4	5	6

القدرة الاستيعابية: يقيس هذا العامل مستوى اعتقادكم بشان قدرة الشركة على استغلال المعرفة الخارجية الجديدة وقيمتها ويتوقع طبيعة التقدم التكنولوجي في الشركة						
يرجى تقيم العبارات الاتية :	**لا اوافق بشدة (1)**	**لا اوافق (2)**	**لا اوافق الى حد ما (3)**	**اوافق الى حد ما (4)**	**اوافق (5)**	**اوافق بشدة (6)**
يتم البحث كل يوم عن المعلومات الخارجية ذات الصلة بعمل مؤسستنا.	1	2	3	4	5	6
يتم تشجيع موظفينا لتحديد ودراسة مصادر المعلومات الخارجية.	1	2	3	4	5	6
نتوقع من موظفينا الحصول على المعلومات الخارجية ذات الصلة بعمل مؤسستنا.	1	2	3	4	5	6
يتم تحليل وتقاسم الأفكار والمفاهيم التي يتم الحصول عليها من المصادر الخارجية بسرعة.	1	2	3	4	5	6
نحن نعمل معا على تنظيم و تفسير وفهم المعلومات الخارجية.	1	2	3	4	5	6
يتم في مؤسستنا تبادل المعلومات الخارجية بسرعة،مقارنة بين الشركات الاخرى.	1	2	3	4	5	6
نحن عادة ما نقوم بتنظيم وعقد اجتماعات لمناقشة الرؤى الجديدة.	1	2	3	4	5	6
موظفينا لديهم القدرة على تنظيم واستخدام المعلومات التي تم جمعها حديثا.	1	2	3	4	5	6
يقوم موظفينا لإعداد المعلومات التي تم جمعها حديثا لأغراض الاستخدام مرة أخرى، وجعلها متاحة.	1	2	3	4	5	6
موظفينا قادرين على دمج المعلومات الجديدة في عملهم.	1	2	3	4	5	6
موظفينا قادرين على الانخراط بشكل منتظم في تطوير نماذج أو مفاهيم جديدة.	1	2	3	4	5	6
يطبق موظفينا المعرفة الجديدة في مجال عملهم استجابة للتغيرات البيئة السريعة.	1	2	3	4	5	6
معظم الوقت ونحن نركز على اطلاق وتطوير منتجات جديدة افضل من المنافسين من قبل المنافسين.	1	2	3	4	5	6
لدينا قدرة كبيرة على التطور التكنولوجي.	1	2	3	4	5	6
دور الحكومة: يقيس هذا العامل مستوى اعتقادكم بشان قدرة الدعم الحكومي في المساعدة التي يقدمها لتشجيع انتشار الابتكارات في شركتكم.						
يرجى تقيم العبارات الاتية :	**لا اوافق بشدة (1)**	**لا اوافق (2)**	**لا اوافق الى حد ما (3)**	**اوافق الى حد ما (4)**	**اوافق (5)**	**اوافق بشدة (6)**
تقدم الحكومة لنا حوافز لتبني تقنيات التجارة الإلكترونية	1	2	3	4	5	6
الحكومة نشطة في إنشاء بنية تحتية لتمكين التجارة الإلكترونية	1	2	3	4	5	6
الحكومة تلعب دورا هاما في تعزيز التجارة الإلكترونية في الشركات الصغيرة والمتوسطة	1	2	3	4	5	6

قوانين العمل الحكومية تدعم التجارة الإلكترونية.	1	2	3	4	5	6
الحكومة تقدم المساعدة للشركات الصغيرة والمتوسطة لاستخدام التجارة الإلكترونية	1	2	3	4	5	6
كثيرا ما يتم توضيح النقاط الايجابية لاستخدام الحكومة الالكترونية من قبل الحكومة.	1	2	3	4	5	6

الثقة : يقيس هذا العامل درجة الثقة والمصداقية مع شركاء العمل. وتشمل الثقة كلا من الصدق والنزاهة والكفاءة

يرجى تقيم العبارات الاتية :	**لا اوافق بشدة (1)**	**لا اوافق (2)**	**لا اوافق الى حد ما (3)**	**اوافق الى حد ما (4)**	**اوافق (5)**	**اوافق بشدة (6)**
شريكنا التجاري لدية الكفاءة والفعالية في تفاعلاته مع شركتنا.	1	2	3	4	5	6
شريكنا التجاري يؤدي كل ادوارة بشكل جيد للغاية.	1	2	3	4	5	6
شريكنا التجاري يعمل في مصلحتنا.	1	2	3	4	5	6
شريكنا التجاري يبذل قصارى جهده لتقديم المساعدة.	1	2	3	4	5	6
شريكنا التجاري غير صادق في تعاملاتة مع منظمتنا.	1	2	3	4	5	6
تتميز شركتنا بصدق شركائها التجاريين.	1	2	3	4	5	6

10. تبني التجارة الالكترونية. يقيس هذا العامل مدي نية مؤسستكم لتبني التجارة الالكترونية

يرجى تقيم العبارات الاتية :	**لا اوافق بشدة (1)**	**لا اوافق (2)**	**لا اوافق الى حد ما (3)**	**اوافق الى حد ما (4)**	**اوافق (5)**	**اوافق بشدة (6)**
تستخدم شركتنا التجارة الإلكترونية او الدفع الإلكتروني، في معاملاتها في جميع الأوقات.	1	2	3	4	5	6
توفر شركتنا للزبائن معلومات عامة عن شركتنا عن طريق (على سبيل المثال، عن طريق الموقع على شبكة الإنترنت،البريد الإلكتروني، ولوحات المعلومات).	1	2	3	4	5	6
ترسل شركتنا تحديثات منتظمة حول المنتجات الجديدة والتطورات الأخرى في شركتنا للزبائن (على سبيل المثال، عبر البريد الإلكتروني).	1	2	3	4	5	6
تقدم شركتنا ردا على أسئلة المستهلك أو طلبات (على سبيل المثال، عن طريق صفحة سؤال وجواب ، وكلاء ذكي).	1	2	3	4	5	6
توفر شركتنا امكانية الدفع الالكتروني للزبائن.	1	2	3	4	5	6

الصراعات المدنية: يقيس هذا العامل الدرجة التي تتأثر بها مؤسستكم بالصراعات الأهلية بخصوص تبني التجارة الالكترونية						
يرجى تقيم العبارات الاتية :	**لا اوافق بشدة (1)**	**لا اوافق (2)**	**لا اوافق الى حد ما (3)**	**اوافق الى حد ما (4)**	**اوافق (5)**	**اوافق بشدة (6)**
التفكير بالحرب في العراق يجعلني اشعر بعدم الارتياح	1	2	3	4	5	6
أشعر بالقلق عند التفكير في الحرب في العراق.	1	2	3	4	5	6
اشعر بالانزعاج عندما افكر بالحرب.	1	2	3	4	5	6
أنا قلق جدا حول كيف أن الحرب ستنتهي في العراق.	1	2	3	4	5	6
انا قلق بسبب زيادة سوء الصراع في العراق	1	2	3	4	5	6
فرضت الحرب قيودا على قدرتنا الابداعية	1	2	3	4	5	6
افشلت الحرب الحالية توسع عمل شركتنا	1	2	3	4	5	6

APPENDIX D
Approval Letter Confirming Translation

رقم الاستمارة

استبيان حول تطبيق التجارة الالكترونية في الشركات العراقية الصغيرة والمتوسطة الحجم

السيد(ة)العزيز(ة)

يقوم الطالب الدكتوراة **عبدالستار عبدالجبار سلطان** من الجامعة الشمالية الماليزية (أوتارا) كلية ادارة الاعمال/ قسم الادارة التكنولوجية واللوجستية باجراء بحث حول تأثير العوامل التكنولوجية، المنظمية والبيئية على تطبيق التجارة الالكترونية في الشركات الصغيرة والمتوسطة الحجم. حيث ستسهم نتائج هذه الدراسة في توجيه هذه الشركات للاستفادة من تطبيقات التجارة الالكترونية ورفع ادائها.

أرجو منحي مابين 15 الى 20 دقيقة من وقتك لاكمال ملئ الاستمارة. كل سؤال هو بالغ الاهمية بالنسبة لنجاح هذا البحث ويتضمن كل قسم تعليمات لضمان استجابات دقيقة. سيتم الاحتفاظ بسرية جميع الاستجابات.

اشكر لكم مقدماً تعاونكم معي والمساهمة في هذه الدراسة.

طالب الدكتوراة : عبدالستار عبدالجبار سلطان

مكان العمل : الجامعة اللبنانية الفرنسية – العراق – اربيل

مكان الدارسة : الجامعة الشمالية الماليزية (اوتارا)

البريد الالكتروني : abdulsatarsultan@gmail.com

2016 . 10 . 26

APPENDIX E
Approval Letter to Collect Data

إقليم كوردستان- العراق
مجلس الوزراء
وزاره التجارة و الصناعة
المديرية العامة للديوان
مديريةالادارة و الذاتية

Kurdistan Region Government-Iraq
Ministry of Trade and Industry

هەرێمی کوردستان – عێراق
ئەنجومەنی وەزیران
وەزارەتی بازرگانی و پیشەسازی
بەڕێوەبەرایەتی گشتی دیوان
بەڕێوەبەرایەتی کارگێڕی و خۆیەتی

No: ٥١٢
Date: ژمارە:
بەروار: / / 2716 کوردی
: / / 2017 زایینی

To: Universiti Utara Malaysia

Subject: conducting a survey

Dear Sir/Madam, Please find the attached survey conducted by the PhD student Abdulsatar Abduljabbar Sultan for his research entitled (The Moderating Role of Civil Conflict on Commerce Adoption Among Small and Medium Enterprises (SMEs) in Iraq) has been distributed to the participants in Kurdistan Region (Erbil City, Sulaimani, and Duhok City) represented by the owners and managers of Small and Medium Enterprises (SMEs).

Thanks for your consideration

Dr. Abdulrazzaq O. Nawandaie
Head of Board of Industrial Zones
e-mail: abdulrazzaqnawandaie@gmail.com
Mobile : 009647504481814

cc:

- Administration Dept.
- Archive.

APPENDIX F

Transcription Note:
Interview with Head of Board Industrial Zone,
Region Government, Iraq
Dr. Abdulrazzaq O. Nawandaie
on 9th February 2017

Date: 9th February 2017

Transcription Note:
Interview with Head of Board Industrial Zone,
Kurdistan Region Government, Iraq
Dr. Abdulrazzaq O. Nawandaie

Q / Do you think that the adoption of electronic commerce will benefit the perceived benefits of small and medium enterprises in Iraq in general and Kurdistan in particular?

A/ Since 2003, the Iraqi government has spent hundreds of millions of dollars on IT infrastructure, which is the most important pillar of e-commerce adoption, but the results were shameful.

Q / According to your opinion why?

A/ Because of the war and unstable security conditions, many projects have been left in the semi-implementation stages. In addition to the difficulty of the government access to areas under the control of armed groups such as Mosul since 2014 and so far, the second largest city after Baghdad.

Q/ Do you think that the application of e-commerce in conflict zones develops small and medium enterprises?

A/ Surely, many business owners can do business without having to go out at least under conditions of war. Especially during intense conflict.

Q/ Do you think these companies have sufficient regulatory capacity to adopt e-commerce?

A/ Certainly they have the financial and financial capacity in addition to technological expertise to adopt trade. But difficult to trace because we cannot go to certain area because of security issue.

Q/ But why so far the number of companies that rely on electronic commerce does not exceed 20% despite the financial support for these companies?

A/ This is a good question has been revealed recently that many small and medium-sized entrepreneurs exploit and misuse the money and use it in non-goals. In addition, there are about 150 companies that have recently revealed that they do not exist originally only registered for the purpose of receiving financial aid.

We are now in agreement with information technology companies such as Microsoft and Oracle for the purpose of building Web sites for these companies and to support the adoption of electronic commerce instead of direct financial support


سەرۆکایەتی
ئەنجومەنی وەزیران
حکومەتی
هەرێمی کوردستان عیراق
وەزارەتی بازرگانی و پیشەسازی
حکومة اقليم كوردستان - وزارة التجارة و الصناعة
Kurdistan Regional Government
Ministry of Trade & Industry